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Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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May Retail New Car Sales Of 250,000 Hold Close to April Levels; Off Only 6%

Registrations Approach Million for First Five Months, Drop of 30 Per Cent. From 1930; June Domestic Market Seen 190,000

NEW YORK, June 19.—Holding close to the April level, retail sales of new passenger cars in the domestic market in May approximated 250,000, according to an Automotive Daily News estimate based on registration returns that have been received from twenty states and the District of Columbia.

The estimated total of 250,000 for last month compares with an actual total of 265,732 in the preceding month, a falling off of only 6 per cent., and with 345,041 in May of last year, a decline of 27.5 per cent.

April new car registrations, now available from all states, compared with 200,400 in March, a seasonal upturn of 32 per cent., or more than the normal expectation. The April total compared with 357,064 in April

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TEXAS A.D.A. HEADED BY ORAND; SPIRITED PROGRAM OUTLINED

SAN ANTONIO, TEX., June 19.—**Improved service to automotive owners, ethical advertising, better organization in the association work and an improved legislation program marked the annual convention of the Texas Automotive Dealers Association held at Mineral Wells June 15, 16 and 18.**

Dallas was chosen for the 1932 meeting over Lubbock and Amarillo. Bruton Orand, Waco, was elected president, W. A. Williamson, San Antonio, first vice-president and general manager, J. W. Shelor, Houston, second vice-president, A. J. Langford, Dallas, third vice-president. The office of general manager serves as secretary and treasurer.

Directors include E. N. Compere, Abilene; L. D. Ormsby, San Antonio; Sam Watkins, El Paso; T. B. Akin, San Angelo; J. B. Dacamera, Laredo; Joe B. Caldwell, Paris, and S. Curtis Fishburn, Dallas.

Dealers devoted considerable time to discussion of better state organization and pledged themselves to hold group meetings over the state during the ensuing year to build up the association.

Many automobile dealers are re-

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NEW, IMPROVED LINE OF PACKARDS TO BE SHOWN WEDNESDAY

Special from A. D. N. Detroit Bureau

DETROIT, June 19.—**There will be a new line of Packards this summer, which will be formally introduced to the public next Wednesday. Technical details will appear in a coming issue of Automotive Daily News. Dame Rumor, who has been insisting for some time that as usual Packard would make changes, was right.**

Doubt as to this was removed this week when some 800 Packard distributors and dealers visited the factory and looked over the new line, following which approximately 400 of the cars were driven over the road to various branches and salesrooms.

While nothing has as yet been

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JUNE NEW CAR SALES SLIGHTLY UNDER MAY IN LEADING CENTERS, TELEGRAPHIC SURVEY INDICATES

NEW YORK, June 19.—Telegraphic reports on new passenger car sales for the first half of June in the leading trade centers of the country indicate a slight decline for the month as compared with May.

These reports were wired to Automotive Daily News today through the co-operation of the following trade associations: Washington Automotive Trade Association, Washington, D. C.; Cleveland Automobile Manufacturers and Dealers Association, Cleveland, O.; Louisville Automobile Dealers Association, Louisville, Ky.; St. Paul Automobile Dealers Association, St. Paul, Minn.; San Antonio Auto Trades Association, San Antonio, Tex.; Los Angeles Motor Car Dealers Association, Los Angeles, Cal.

In Washington, D. C., during the first ten days of June this year approximately 1,000 new cars were registered and 2,000 used cars. This compares with the same period of 1930, when 800 new and 1,700 used cars were sold. During the same period for May this year the registrations were 807 new and 1,666 used cars.

Cleveland's report for the first fifteen days of June this year shows 1,284 new car sales, with 5,311 used cars. May registrations for the same period were 1,643 new and 6,431 used cars. For the entire month of June, 1930, there were 3,611 new cars sold and 12,383 used cars.

First-half sales for June at Louisville, Ky., are reported as 260 new cars, compared with 344 for the first half of May, a reduction of 84 cars,

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Technical Discussions at S. A. E. Convention Center on Chassis, Particularly on Riding Qualities

Effect of Tires, Wheel Sizes, Etc., Earnestly Discussed Following Paper; E. S. Marks, Presiding, Stimulates Interest With Observations

By WILLIAM C. CALLAHAN
News Editor

WHITE SULPHUR SPRINGS, W. VA., June 19.—At the technical session of the S. A. E. here yesterday centering on the chassis, a considerable amount of interesting discussion was called forth by the papers, particularly as regards riding qualities and the factors that enter into the problem.

The effect of tires, wheel sizes, etc., were earnestly discussed after the papers had been read. E. S. Marks presided at this session and stimulated discussion with a number of pertinent observations. The following is the report on the discussions:—

Chairman E. S. Marks: There can be no doubt that riding comfort features are at or near the top of the list of characteristics of the design of any new car. The S. A. E. have recognized this in a number of ways. Each semi-annual and annual meeting has seen arranged in the program some papers on riding comfort. In addition to this, a research committee has been very active in the society trying to delve into the secrets of riding comfort from two angles (1) to find out exactly how you might define riding comfort; (2) how you are going to measure it.

We also noted that early in the week much of the discussion in the body sessions had to do with riding comfort. In considering all the elements of design which affect comfort, you practically have to think of all of the major elements of the car, because any element of the de-

(Continued on Page 2)

S.A.E. MEETING ENDS WITH ALL SATISFIED; MUCH ACCOMPLISHED

By WILLIAM C. CALLAHAN,

WHITE SULPHUR SPRINGS, W. Va., June 19.—**At this writing the 1931 summer meeting of the Society of Automotive Engineers is a bright spot in the brilliant history of that orginization. The official business of the meeting was wound up at noon here today with a meeting of the research committee in the morning. The women finished their final bridge play.**

This meeting has been held under ideal conditions, with warm, clear weather and an important technical program that has brought out most interesting discussions. The attendance has not been so heavy as in past years, but approximately 350 members remained to attend the grand ball which climaxed the social events last night.

The general production session

(Continued on Page 8)

Late News Flashes

St. Louis, Mo., June 19.—Russell E. Gardner, president of the Gardner Motor Company, has been appointed receiver for the company. Directors of the company consented to the receivership following the failure to obtain a stockholders' quorum to authorize the liquidation of assets.

* * *

Detroit, June 19.—While advices from Flint state that Charles F. Barth will retire July 1, as vice-president and general manufacturing manager of Chevrolet, no confirmation of this can be obtained at Chevrolet headquarters here. It is understood that Mr. Barth has resigned after fourteen years' service with Chevrolet and that announcement of its acceptance will be held up until July 1, when it is thought his successor will be named.

* * *

Washington, June 19.—The May wholesale commodity price index of the Bureau of Labor Statistics was 71.3, as against 73.3 in April and 89.1 in May, 1930.

Free Wheeling Available Now On All Graham Models

DETROIT, June 19.—**Graham-Paige announces that an improved type of free wheeling may now be had at a low extra cost in any of the new low priced three-speed Graham Prosperity Six, as well as in the four-speed models.**

Graham free wheeling enables the driver to shift quickly and silently without declutching, not only into the higher gears, but into low gear as well, it is claimed. While free wheeling, the clutch need be used only in starting.

The change from free wheeling to positive drive can be made instantly at any time regardless of car speed, and in any gear. In either drive, the unit continues to operate as set by the driver through all changes of forward gears without further attention.

Control is by means of a short lever close to the driver's hand. When the lever is forward, free wheeling is inoperative when the lever is moved to the rear, the car free wheels.

The peak of free wheeling advantages, the Graham engineers say, is realized in its combination with the Graham four-speed models. Even without free wheeling the four-speed synchro-silent transmission permits silent gear changes from second to third, third to fourth and fourth to third. Moreover, they point out, the four-speed drive, with the high-geared rear axle, gives in itself a marked redutcion in engine revolutions per mile. In conjunction with free wheeling, both these effects, easy gear changing and reduced engine revolutions, are obtained to a still greater degree, they say since the synchronizing device facilitates the clutchless gear changing, and the coasting effect of free wheeling still further reduces the engine revolutions per mile.

The four-speed Graham cars with

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Emphasizes Service to Build Up Truck Shop Business

Story on Page 3

S. A. E. Technical Discussion Centers Around the Chassis

(Continued from Page 1)

sign which is a producer of vibration is usually adversely effective on the comfort of the passengers in one way or other. So after all, this subject of riding comfort is an all-inclusive subject, and no doubt deserves the place that has been given to it on the programs of the society.

R. W. Brown, Firestone Tire and Rubber Company: During the past several years, as you well know, there has been quite a change in the performance requirements of passenger motor vehicles. Speeds have been continually going up, rim diameters have been almost as continually becoming smaller, engine torques on the wheels have been becoming greater, and demands for freedom from tire service have been very much greater. These things all contribute to a condition which has been met, at least in part, by the automotive engineering facilities of the various organizations.

These conditions have arisen and have been met in part by developments in the motor, in the transmission, in the various other mechanical parts which are necessary to propel a vehicle, but in particular have they been met by distinct efforts to increase and improve the elastic suspensions of the vehicles. A number of years ago investigations and researches were instituted, and they have been carried on continuously by various organizations and have been sponsored by the research subcommittees of the society. (Mr. Brown presented prepared discussion.)

Chairman Marks: The thought had occurred to me in connection with this paper that quite a large amount of stress has been laid upon the load which a tire can carry, sometimes expressed to us as well by tire engineers "if your car weighs so much we recommend a certain type of tire"; but we have found, as I guess most car engineers realize, that there is another deciding factor from the standpoint of life of the tire, which is very important, and which is the continuous high speed that we are driving the cars at. So although this impresses me as being very interesting from the standpoint of the average deflection of a tire when it is under twice normal load, there is still that other factor of continuous high speed performance that we just cannot dodge at all if we want to put tires on our cars that will give the tires that life that the owner of the car expects.

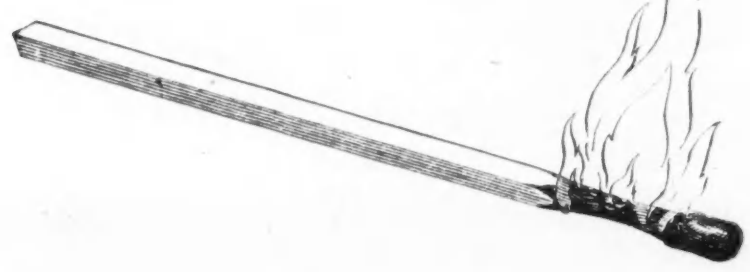
I see some other tire men here and I feel certain that they would have some remarks to make on this paper. I see some men here who are advocates of low unsprung weight. Have they anything to say?

Maurice Olley, Cadillac Motor Car Company: I would like to ask just two questions. On the curve showing the relationship between loading and wheel diameter, in changing the tire diameter from, say, a twenty-inch wheel to a seventeen-inch wheel, does that take account of the optimum of inflation pressure for the tire, or does that take account for the same inflation pressure for the tire? That was one question. The other question is, Has Mr. Brown any data on the variation of dampening to the hysteresis loop with the diameter of the tire?

Mr. Brown: With reference to

(Continued on Page 7)

In how bad a FIX would a FIRE leave YOU?

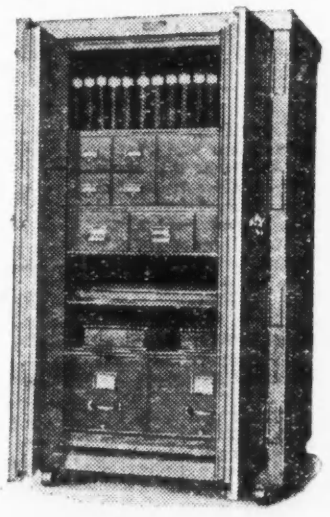


CONSIDER the fact that the loss of your accounting records by fire must result in costly complications with your bank, your customers and your sources of supply. That destruction of your sales records would seriously cripple your plans for business development. That if your stock records were reduced to ashes, you could show no proof of loss upon which a satisfactory insurance settlement would depend. The risk is far too great to take!

You can protect *all* these records for *all* time by installing Safe-Cabinet equipment. Safe-Cabinets are made in many styles and sizes and in three grades, each certified to protect its contents from definite lengths of exposure to severe heat.

Conserve your capital by installing Safe-Cabinet protection *now* and paying for it *by the month* just as you do rent, insurance and ninety percent of your obligations.

Mail the coupon for full details on the protective service Safe-Cabinet can render you. Do it today lest fire take its frightful toll by catching *you* unprepared.



No. 53 Safe Cabinet

Safe-Cabinet Division

Remington Rand

BUSINESS SERVICE

BUFFALO, NEW YORK

Send me the full story of Safe-Cabinet protection A. D. N.—6

Name _____ *Firm* _____

Address _____

SPARKS from DETROIT

Miniature Racing Next

* * *

Sells Monarch 2 Cars

* * *

Ford Financing Gains

* * *

Detroit's Woman Dealer

Chris Sinsabaugh—Detroit Editor

OWN an Austin and get a good paying job for the summer is the attraction offered in a classified ad in the Free Press, which attracted some attention in and about Detroit. The ad says:

"Wanted—Austin car owners to enter 100-mile Austin race; no fees; races all summer, week ends; good income. Write Promoter, 1505 Center St., Detroit."

Which recalls that several weeks back a race for Austin cars was scheduled at a local track, but it fizzled out because of some complications as to who had the say about leasing the track. There was a fair entry for the event, so evidently some keen promoter sees a chance for miniature racing.

* * *

"HERE'S something for the column," said L. J. Robinson, manager of the Pierce-Arrow factory branch in Detroit, as he passed over a story that had come to him from Buffalo. It was an unusual yarn, all about how A. R. Collins of Washington Pierce-Arrow is the "only salesman in the world who has sold an automobile to an absolute monarch in the United States." Interpreted, this means that Collins, taking advantage of the presence of King Prajadhipok of Siam in this country, had got the name on the dotted line for two Pierce-Arrows, one a seven-passenger tourer, which will be used by the King in his motor travels in the United States and Canada, while the other is an inclosed-drive limousine. Modestly, Collins claimed there was no salesmanship required. The King did not even have a demonstration. The cars were submitted to him, and he at once said yes.

* * *

THE Universal Credit Company, which does the financing for the Ford dealerships, reports that the month of May showed a definite increase in volume and that collections were up to the most satisfactory standards. The company states that Ford dealers have done over $700,000,000 worth of business with the organization, which has handled more than 1,250,000 time sales transactions.

* * *

DETROIT is claiming the only woman automobile dealer in Michigan, Mrs. Stanley Sawicki, owner and manager of the Stanley Motor Sales, 7958 Michigan Ave. Mrs. Sawicki has been carrying on the business since the death of her husband and is handling Hudson and Essex in the domain presided over by Aaron De Roy, distributor.

* * *

OF the eight men selected to fill vacancies on the directorate of the Detroit Board of Commerce, four of them come out of the automobile industry—William S. Knudsen, president of Chevrolet; W. Ledyard Mitchell, the Chrysler export chief; Edward S. Evans, whose automobile loading blocks for freight shipments have earned him fame, and J. Walter Drake, formerly a high executive at Hupmobile.

* * *

R. J. MURPHY, manager of the Washington Automotive Trade Association of Washington, D. C., reminds us that the Roebling was not mentioned in the Curtis list of American-made automobiles. The Roebling, he says, was built at Trenton, N. J., in the building originally built to manufacture the Walter car, but the name Roebling did not seem to click so it was changed to Mercer. That's something about the Mercer we did not know, so this bit of information is going into the archives.

* * *

IF Dame Rumor is right about a new Plymouth line, President F. A. Rockleman, head of that Chrysler unit, has come out of the hospital just in time to swing into the saddle and sniff the smoke of battle. Mr. Rockleman was on the sick list for nearly two months, but today we find him shy on poundage and weak following the long illness, but eager to get on the firing line again.

* * *

STILL talking the "native son" language, but having to change the sex, we will tell you of the strong-hearted Grandma Stewart, who recently celebrated her seventy-third birthday, who left Detroit this week in a new Chevrolet six, purchased in this city, for San Pedro, Cal., a jaunt of 2,800 miles which she expects to make in about thirteen days. The unusual thing about this expedition is that Grandma is doing all the driving, but that is nothing new so far as she is concerned. She already has made the same trip five times, usually alone.

Across the street in Chevrolet headquarters in the General Motors building, they are just as much excited over the Grandma Stewart trip as they would be prior to the announcement of a new line of Chevrolet.

Truck Shop Built Up by Service Emphasis

Attention to Needs of Owners Highly Developed by Philadelphia Factory Branch; C. P. Sharpless, Manager, Believer in Personal Contact

SELLING service is a phase of its business highly developed by the Relay Motor Truck Corporation of Pennsylvania, 3210-20 Spring Garden St., Philadelphia, of which Charles P. Sharpless is factory branch manager. The corporation handles all the merged output units of the factory in Lima, O., which are, in addition to the Relay truck, the Garford, Service and Commerce, concentrating especially as to sales of new units on the Relay.

Complete stocks of parts suited to all four brands are maintained and the corporation stands ready to service each type of unit. There are a large number of Relay and Garford trucks operated in the territory, which takes in a radius of upward of seventy miles, and the corporation keeps in close contact also with the owners of service and commerce units who come to the stockroom to buy replacement parts.

Mr. Sharpless, who has been in business in the territory for some sixteen years, enjoys the good will of operators throughout the district, obtaining many repeat orders.

Personal contact, he believes, is the most effective means of obtaining service and repair business, as it is in producing sales of new trucks. Mr. Sharpless and the five salesmen whom he has at present make frequent calls on owners and prospects, talking service as well as sales. The service superintendent not only calls up a certain number of owners by telephone from time to time, inquiring about the condition of the trucks and making any desirable suggestions about having them brought in for service, but every thirty days makes a personal call on each prospect for service work.

Fleet owners are carefully cultivated with regard to service and repair work, and at the beginning of the season the service department sends out a letter to the smaller operators suggesting that they have their trucks put in shape to be ready for steady business. The service and repair shop is completely equipped with the usual light and heavy machine and hand tools to perform any kind of operation in the most skillful manner and without waste of time.

Truck rebuilding is one feature of the shop work and direct mail is one method used to obtain this business. When the department sends out letters of this kind, they are not of the cut-and-dried form type, but each letter is suited to the needs of the particular owner addressed. Sometimes, when a letter has brought in a truck and the shop superintendent notes that the work necessary to put it in shape would be so expensive that the owner would serve his best interests by purchasing either a new or a good used truck, he is plainly told so, though not importuned to buy, with the result that not infrequently the shop loses a job, but a truck sale is made.

While the shop exists primarily to take care of trucks sold by the corporation, its facilities are such that it is prepared to take care of trucks of other makes equally as well, and many operators of trucks other than those sold by the corporation are glad to take advantage of the fine facilities available.

In the matter of sales promotion, in addition to the personal calls made by Mr. Sharpless and the five salesmen, one of whom, although working out of the Philadelphia office, lives out in the state and has sub-dealers under him, the factory rotogravure publication, Relay Graphic, a four-page paper, with the news of the transportation world told only in action pictures, accompanied by brief explanatory captions, is mailed periodically to prospects.

This is done with the compliments of the Philadelphia factory branch, and a return postcard is inclosed in the folded paper addressed to the main factory, requesting that the recipient be sent a copy of the book, "The Story of Relay." Spaces are left at the bottom of the card for filling in the name of the prospect's company, the address, the signature of the prospect and his title. Much interest is created among prospects receiving the publication, and many requests are made for the book. The Philadelphia branch has a mailing list of this paper of 2,200.

Besides the accredited sales staff, every department employee in the plant is regarded as a salesman, and is empowered to sell, this applying from a stock clerk up. Although, as mentioned, the staff is small at this time, the number of salesmen has reached eight or nine at different periods.

When a salesman is calling on a prospect, it is an ordinary occurrence for the former to supply the names of several Relay owners in the vicinity and recommend to the prospect that he call up by telephone at his leisure and inquire as to their satisfaction with Relay.

The average Relay owner is glad to oblige by giving this information, and prospects often take advantage of the offer to call them up and verify what the salesman has told them about the truck and its performance. Satisfied customers, too, often supply the corporation with names of new prospects.

Once a week the corporation inserts its own advertisment in two Philadelphia daily newspapers. These displays are two colums in width and about three inches deep, being somewhat uniform in style, though not in wording or illustration. Ordinarily, a cut of some local Relay owner's truck, purchased from the corporation, accompanies the text of the advertisment, which usually brings out some special economical feature of the use of Relay.

In order that prospective purchasers may thoroughly understand the principle of Relay, they are shown "The Relay Movie," which portrays in detail the construction of the Relay axle and shows, besides, very interesting Relay truck installations. The principle of the Relay drive is so clearly set forth that it is readily understandable, and, while the onlooker is surprised that what he thought to be highly intricate mechanism is, after all, a very simple principle, he cannot fail to be impressed with the advantage of having trucks so equipped, resulting, as it does, in worth-while savings in tires and mechanical upkeep.

Service Co-operative Ad

Fourth of a Series of 20 Messages
Car SHIMMY is DANGEROUS
HAVE IT ELIMINATED BY A CERTIFIED GARAGE MECHANIC
CAR "SHIMMY" is responsible for a major portion of auto accidents. The tremendous vibrations set up at high speed are sufficient in some cases to tear the wheel from the hands of the driver—or in the case of wear on bushings and king pins the latter are sometimes sheared off during this vibration, loosening the spindle from the axle, causing serious damage if not injury. At the first sign of "shimmy" in your steering apparatus—bring your car into one of the "Certified Service" garages listed below! They will make the necessary adjustments to eliminate this condition.
CERTIFIED AUTO SERVICE
This Service Is Represented by the Following Responsible Auto Repair Firms
Look For This Sign
CAMDEN
Ames Automotive & Battery Service
1215 Mt. Ephraim Ave.
Phone Camden 5005-W
Automotive Machine Works
5th and Boyden Streets
Phone Camden 6071
Chas. Bellino & Bros.
607-10-11 Main Street
Phone Camden 6158
Sam. Bishop
944 Baldwins Avenue
Phone Camden 5000
Duron Super Brake Service
9th and Market Streets
Phone Camden 2100
Franklin Motor Service
1160 Cooper Street
Phone Camden 2047-W
Al. Garwood
Euston Avenue and Linc Street
George's Garage
218-24 Arch Street
Phone Camden 2709
Keyes Service Station
255 North 36th Street
Phone Camden 7297
Motor Service Co.
6th and Mechanic Streets
Owl Garage
2207 Chestnut Street
Phone Camden 5967
S. and S. Motor Co.
7 South 36th Street
Phone Camden 1068-W
Vesper Garage
947 South 3rd Street
Phone Camden 7899
COLLINGSWOOD
Kay's Auto Repair Shop
Maple and College Avenue
Phone Collingswood 6
GLOUCESTER
Phillips Garage
313 5th Street
Phone Gloucester 1139
HADDON HEIGHTS
Atlantic Garage
210-16 W. Atlantic Street
Phone Haddon Heights 551-J
MERCHANTVILLE
Gasoline Alley Garage
16 W. Park Avenue
Phone Merchantville 3280
PALMYRA
Lloyd & Gaskill
307 E. Broad Street
Phone Riverton 481
RIVERSIDE
Raphael & Johnson
St. Mihiel Drive and Stewart Avenue
Phone Riverside 221—121
RIVERTON
Clinton B. Woolston
Phone Riverton 489
WESTMONT
M. & E. Service Garage
Haddon Avenue and Gelbert Road
Phone Collingswood 4153

CAR DEALERS and service station operators in and around Camden, N. J., are conducting a co-operative campaign that is showing results. A series of twenty messages, the fourth of which is reproduced above, is being used, each one taking up one phase of repair work. The dealers are listed in each advertisement

Increase Service Volume By Method of Approach

ADOPTION of an attitude of sympathy and understanding toward owners troubled by business conditions, who desire to keep their cars running at the least possible expense, has enabled Fish, Fosdick & Mills, Oakland-Pontiac dealership of 206 Whalley Ave., New Haven, Conn., to double its service volume, according to D. E. Rausch, service sales manager.

"We have got to sell service these days," says Mr. Rausch. "The small items come first. We can discuss the major service jobs and hold them for the future, but our main object is to hold the customer, so that when he is able to have the larger jobs done he will come to us. We try to show the customer that we understand how business conditions are and will do everything we can to keep his car in operation at the least cost to him.

"About 85 per cent. of our customers are treated on this basis, and we find that they appreciate our attitude. It makes for continued business in the future. We find that many customers' cars have been let go as long as possible with a minimum of repairs, and we try to train the nine men in our department along the lines I have stated.

"We hold meetings with the men twice a month and go over all the points of selling service to customers as well as have general discussions on many and varied items.

"The general result of our methods of handling customers is shown by an increase in business of 100 per cent. over last year. In 1930 we employed three men in the service department, and today there are nine."

150 WILLYS-OVERLAND DEALERS IN CAROLINAS TO MEET AT CHARLOTTE

Charlotte, N. C., June 19.—Willys-Overland dealers numbering approximately 150, from all the cities and larger towns of North Carolina and South Carolina, will assemble here Monday, June 22, to meet with officials of the manufacturing company, according to an announcement by J. B. Dorris of Dorris-Green Motor Company, distributor.

The factory executives who will be here for the dealer conference will be N. A. Beardsley, general sales manager, and H. J. Gerkins vice-president and treasurer.

Arrangements have been made for holding the business sessions at Hotel Charlotte, where the dealers will be guests of the distributing corporation luncheon at noon. After the luncheon, brief talks of an inspirational nature will be made by several speakers.

IOWA CHEVROLET DEALERS HEAR SALES POLICIES TALK

Waterloo, Ia., June 19.—More than fifty Chevrolet dealers from Black Hawk and eleven other surrounding counties in Iowa met at the Hotel Russell-Lamson to hear Abe Parker, Des Moines zone manager, explain sales policies for the coming year. He was accompanied here by eleven department heads, who assisted him in writing new 1931 and 1932 contracts.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

NEW JACKSONVILLE HOME FOR CHRYSLER DISTRIBUTOR

Jacksonville, Fla., June 19.—A modern, spacious one-story building will be erected on the southeast corner of Laura and State Streets to be used by the Stanley Motors Company, Inc., distributor for Chrysler and Plymouth cars. Announcement of the deal was made by E. R. Stanley, president of the company.

"THE new Willys line has received an enthusiastic reception here because of outstanding quality and remarkably low prices."

—Ervin Feld Motor Co.,
Kansas City, Mo.

Write or wire for franchise particulars

Willys-Overland, Inc., Toledo, O. Willys-Overland, Ltd., Toronto, Can.

WILLYS

A BIG SIX priced like a four
A POWERFUL EIGHT . . .
A BRILLIANT KNIGHT . . .
2 NEW WILLYS TRUCKS

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday and Monday by
AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
350 Hudson St., New York, N. Y.
O. J. Elder, President. H. A. Tarantous, Vice-President. Alexander Johnston, Secretary.

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350 Hudson St., New York, N. Y. Telephone CA nal 6-1000

Member A. B. C.

Mail subscriptions to CIRCULATION DEPARTMENT 350 Hudson St.

Subscription Rates—One year, $12.00; two years, $20.00, for United States and Canada, also Mexico, Cuba and Panama.
To Other Countries—One year, $15.00; two years, $26.00. Single copies, 5 cents.

SATURDAY, JUNE 20, 1931

ADVERTISING AND BUSINESS HEADQUARTERS

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Statistical Department (registrations and specifications), P. J. Robas, statistician, C. J. Alexander, sales analyst. Engineering Department, A. Benson Carleton, technical editor; J. Russell Walsh, engineering editor. Merchandising Department, Charles S. Zack, editor. Art Department, John Bauersfeld, director.
Detroit Bureau, Chris Sinsabaugh, editor, 427-8 Fisher Building, Detroit, Mich. Telephone Empire 3500. Contributing editor, John C. Wetmore.

Babson's Prophecy

DURING the present depression economic experts and prophets have gone through a bad time. The period of depression has refused to run true to past similar periods in recent history. It has dragged on and on, after the prophets have assured us that we have passed the bottom.

Most of us remember the fact that one of the first economists to warn us in 1929 that trouble was impending was Roger W. Babson. His warning fell on deaf ears, in the main, until the stock crash of late fall disclosed the true situation to every one. At any rate Mr. Babson did assert, before the outward signs appeared, that we were heading into a period of serious depression. Last fall Mr. Babson told us that within a few months we would have passed the bottom of the depression and slowly and painfully would begin the long ascent.

All this lends interest to the statement which Roger Babson made recently to the advertising executives of America in convention assembled. Mr. Babson told the advertising men that he was willing to stake his reputation, based on thirty years of economic experting and experience, on three facts, that:

1. Business has seen its worst.
2. Although the change will be slow, it will be in the right direction.
3. Within a reasonable time, this country will again enter upon a period of marked prosperity.

Mr. Babson added some advice to the advertising men present, which must have been entirely satisfactory to those gentlemen. "As you go back home," said he, "tell your merchants that now is the time to advertise and give their customers an opportunity to benefit from present low prices. Some day those merchants who take your advice will be so pleased that they'll have these ads of 1931 cut out and framed."

There is no question that the one best lever to lift hesitating business upward at the present time is intensive advertising. Prices today are a forceful sales argument. In our own industry, there never before has been a time when a dollar will buy so much as it does today. Price levels in general are ranging around the 1914 marks. Compare the motor vehicles of 1931 with those of 1914 if you would get an idea of how much more quality you can buy for the same or less money.

Protecting Labor

IN his remarks before the Advertising Federation recently, Governor Ritchie of Maryland expressed an opinion which this newspaper has advanced a number of times in the past. Warning American business that it must find a way of protecting its employees against "the rigors of unemployment," Governor Ritchie said:

"The business which reaps profits of labor when times are good must not turn labor over to citizens relief committees for food and clothes and the necessities of life when times are hard. If business does not realize that this problem belongs primarily to it; if business does not have the statesmanship within itself to find the remedy, then the government, whose ultimate objective is to care for its citizenship, will seek the remedy and will find it."

We agree with Governor Ritchie completely when he says that, unless business protects labor against unemployment, the government will step in and try to find a remedy. We may be naturally pessimistic, but we cannot picture government "finding any remedy," or doing anything, but muddling matters worse than they are now. Faced with a major depression, "the noblest experiment" Congress could think of was the Hawley-Smoot tariff act. With this sample of congressional "help" before it, business and industry will be well advised to seek some sane method of obviating the rigors of unemployment, rather than leaving it to Congress.

DEALER APPOINTMENTS FOR DE VAUX IN U. S. ANNOUNCED BY MULCH

Grand Rapids, Mich., June 19.—R. H. Mulch, general sales manager of De Vaux-Hall Motors, has announced the appointment of the following new dealers of De Vaux cars:

Holmes Sales Company, Kalamazoo, Mich.; A. W. Larzelere, Dowagiac, Mich.; Franklin Sales and Service, Norwalk, Conn.; Lloyd J. Miller, Sterling, Conn.; Howard F. Ibelle, Inc., Hartford, Conn.; Quinn Service Station, 26 West Fulton Ave., Gloversville, N. Y.; Delamarre-Beakhurst Motors, 41-43 Park Ave., Bay Shore, L. I., N. Y.; Wittner Motor Company, 108-02 Merrick Boulevard, Jamaica, L. I., N. Y.; Kings Highway Marmon Corporation, 2013 Coney Island Ave., Brooklyn, N. Y.; A. V. Heiser, Orwigsburg, Pa.; Hamtramck Super Service, 11330 Jos. Campau, Hamtramck, Mich.; Falle-De Vaux Company, 112 Niagara St., Niagara Falls, N. Y.; Denmer and Edgecombe, 131 Queen Ave., London, Ont., Canada; Colonial Garage, St. Johns, Newfoundland.

Mr. Mulch also announced the appointment of the following new distributors and dealers of De Vaux cars: Capitol Motor Car Company, 32 South 4th St., Columbus, O.; Lloyd Newcomer, 52½ South Diamond St., Mansfield, O.; Motor Service Company, East Grand Forks, Minn.; Watts Motor Company, Beckley, W. Va.; Sharp Service Garage, Barboursville, W. Va.; Cox-Morton Motor Company, Huntington, W. Va.; Claude G. Sidney Company, 164 West Main, Amsterdam, N. Y.

N. J. SEEKING SAFETY ON EXPRESS HIGHWAY

Trenton, N. J., June 19.—Four state departments are engaged today in studies to devise means of making the express highway between Newark and Trenton safer for traffic.

The highway was opened eighteen months ago. Since then there have been 483 major accidents. A majority of the accidents have been on the twenty-mile straight stretch between Trenton and New Brunswick.

The highway, state police, Traffic and Motor Vehicle departments are considering compelling trucks to use the old Lincoln Highway as a step toward decreasing accidents.

JAMESTOWN METAL BUYS SITE FOR PLANT ADDITION

Jamestown, N. Y., June 19.—The Jamestown Metal Equipment Company, Inc., manufacturer of automobile radiators and metal equipment, has purchased from the city of Jamestown the property adjoining its plant at Allen Street and Tiffany Avenue. Preliminary plans are in progress for construction of an additional plant unit on the property.

COMING EVENTS

JUNE

21—**Montlery Track, France.** Automobile Club of France, grand prize race.
22-26—**Chicago, Ill.** American Society for Testing Materials, thirty-fourth annual meeting.
22-27—**Boston, Mass.** National Association of Credit Men, convention.
29-30—**Chicago, Ill.** National Association of Taxicab Owners, meeting.

JULY

4—**Altoona, Pa.** Automobile race.
19—**Nurburg-Ring, Rhineland, Germany.** Automobile Club of Germany, grand prize race

SEPTEMBER

1- 3—**Cleveland, O.** Hotel Statler, Society of Automotive Engineers, twentieth annual aeronautical meeting in conjunction with National Air races.
8-17—**Utrecht, Holland.** Utrecht Fair, bus and truck show.
16-17—**Atlantic City, N. J.** National Petroleum Association, annual meeting, Hotel Traymore.
20-26—**Springfield, Mass.** Eastern States Exposition.
21-25—**Boston, Mass.** American Welding Society, meeting.
28-29—**Atlantic City, N. J.** National Association of Motor Bus Operators, fifth annual meeting, Hotel Ambassador.
26-Oct. 2—**Atlantic City, N. J.** American Electric Railway Association, annual meeting.

OCTOBER

1-11—**Paris, France.** International Automobile Salon.
2- 3—**Houston, Tex.** American Institute of Mining and Metallurgical Engineers, petroleum division meeting
12-16—**Chicago, Ill.** National Safety Council.
14-16—**Pittsburgh, Pa.** Society of Industrial Engineers, convention.
15-24—**London, England.** International Motor Exhibition, Olympia Hall.
22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.

Contemporary Comment

SO many things happen across the purchasing agent's desk that it is hard to know where to begin and impossible to cover everything. Dean Pound of the Harvard Law School, in a recent talk to our New England purchasing agents, said that to tell history completely would take exactly as long as it has taken to make history, and that any account of it must necessarily be selections made by the historian. Selections of course influenced by the point of view of the historian, and so it is with the life of the purchasing agent.

We have the best job there is. In the first place we are business men. I live and work in an atmosphere of professors and doctors. Fine men, interesting men, but I would not change places with them. The professor begins life as a student, he becomes interested in some special branch of study, becomes an expert at it, devotes his mind to that subject for the rest of his life and pays little attention to outside matters. He tends to become narrower and narrower. This is not always so, there are broad-minded ones, men with a wide vision, but too often we find them with the right feeling that with their highly developed brain power they know more than others about their special subject but to this they have added the wrong impression that they know more than others about other things.

The business man presents the reverse side of the picture. Usually he is not much of a student and starts life with a humble idea of his own intellectual powers. He finds himself facing every kind of a problem which he must solve without any special knowledge of it, and he is wide awake to procure every bit of knowledge that will help him. His own success or failure hangs upon his solution of this problem. It is the patient that dies if the doctor is wrong. It is the client that goes to jail if the lawyer fails. But it is the business man himself who is hurt if he fails to solve his own problem. The result is that he fears or recognizes some superiority in every man with whom he comes in contact and makes a real effort to learn from him whatever will be of value in the solution of his own problem. As he grows older in experience he tends to become broader and broader.—**W. G. Morse, Purchasing Agent, Harvard University, in Detroit Purchaser.**

* * *

THE United States Navy has directly assisted the aeronautical industry in many specific ways, of which I will cite and briefly discuss four: The development of the present-day types of air-cooled engines; the development of adequate methods of protecting aluminum alloy seaplanes from corrosion; the sponsoring and development of the metal propeller; the contributions made by the Naval Aircraft Factory to the industry in the form of standards of design and manufacture, test results and conclusions, and especially in the form of the large number of trained engineers and executives who have resigned from the Naval Aircraft Factory to accept positions in the aeronautical industry.

The air-cooled engine for airplanes was developed under the supervision of, and to a considerable extent on, contracts sponsored by the Bureau of Aeronautics. The navy adopted air-cooled engines for observation and training airplanes as early as 1923, and by putting the engines into actual service enabled the manufacturer to improve his product steadily.

The bureau purchased a quantity of each improved model as the development progressed, and shared with the manufacturers the expense and annoyance of working the troubles out of the engine designs. Finally, the development resulted in the production of several models of eminently satisfactory air-cooled engines, which were readily available to power the commercial airplanes brought forth in answer to the sudden demand of 1928 and 1929. Practically every commercial airplane flying or being built today is powered by an air-cooled engine which is the direct outgrowth of the program sponsored, and financially supported in its infancy, by the Bureau of Aeronautics.—**Rear Admiral Moffatt, Chief Navy Bureau of Aeronautics, in United States Daily.**

* * *

PURCHASE of American industrial machinery by the Soviet Union in Europe caused the total exports of such equipment in 1930 to be the highest since 1920, according to an announcement of the United States Department of Commerce. Exports to the U. S. S. R. totaled $41,702,000, nearly three times the amount in 1929 ($14,366,000), while shipments to the United Kingdom, Germany, France, etc., declined. The increase in the total exports to Europe was due to the gain in those to the Soviet Union.

Exports of industrial machinery to all countries declined from $257,085,000 to $220,913,000, a loss of 14 per cent., while those to Europe rose 13 per cent., totaling $89,125,000 last year. Shipments to the United Kingdom, amounting to $22,153,000, showed a drop of $4,385,000 (16 per cent.). Great Britain lost its rank of second among importers from the United States to the Soviet Union. Canada, which again ranked first with a total of $45,839,000, showed a drop of 30 per cent. Exports to France, $8,457,000, declined from $12,006,000, and those to Germany fell to $5,344,000, a loss of $1,749,000.—**Economic Review of the Soviet Union.**

Delivering Oils and Gasoline Profitably

With summer and its accompanying increase in demand for automobile lubricants and fuels well on its way, the following survey on "Delivering Oils and Gasoline Profitably," which was compiled by the General Motors Truck Company, Pontiac, Mich., should be of particular interest. The full text of the report covering the facts brought out during the survey is appearing serially in Automotive Daily News. The report in pamphlet form is also available at all General Motors Truck Company dealers and distributorships.

THE maximum limits of a trading area are not the only limits to profitable deliveries. Individual stops on each route are profitable or unprofitable in relation to the same factors—miles covered, time spent and volume of the sale.

An isolated customer, to whom delivery must be made at the cost of several miles of additional running time, is likely to prove unprofitable unless his volume is large enough to pay a profit on the expenses of serving him. But during during the survey preceding this report literally scores of these isolated customers were found. Serving them is quite as expensive as making an underload special delivery of a small order to a customer several miles away.

The sales executive who makes a careful study of his trading area to determine which customers are unprofitable from the standpoint of mileage required to deliver, time consumed and volume of sales has two possible courses of action open to him for correcting these losses:

1. He can drop the unprofitable customer and seek a more profitable one to take his place, or

2. He can set about systematically to buold the unprofitable customer into a profitable one.

Few distributors like to drop customers with whom they have cordial business relations, even when they know those customers are not profitable at the time. Nor is that step necessary in most cases, for there are several ways of building unprofitable customers into satisfactory accounts. And constructive sales management demands this type of sales effort.

Present customers, whether profitable or unprofitable, should be constantly helped to be better customers. The first task of the distributor's salesman is to show his retailers how to become better merchandisers. The distributor's products are not sold until the retailer has moved them from his pumps, tanks and shelves to the consumer. For that reason, the salesman who simply calls on the retailer, kicks his oil drum, checks his stock and moves on is doing only a small part of his job. His real job is to help the retailer to sell more petroleum products. That is the only kind of selling that will profit the retailer, the distributor's salesman and the distributor.

Routes should be planned to demand a minimum of time and mileage. Frequently the customer, whose account is unprofitable because of his isolated location on the route from which he is served, can be made profitable simply by readjusting the routes to reduce the mileage required to serve him.

New business efforts of salesmen should be directed towards getting new, profitable customers along present routes. If a new, profitable customer, located near to an unprofitable customer is added to the route, time and milage devoted solely to serving the unprofitable customer is reduced. Sales effort should be concentrated into territories now served by the distributor's trucks. That kind of sales effort produces the greatest sales profit, for it increases volume without increasing delivery mileage.

Sound sales management for the petroleum products distributor means keeping an eye constantly open to delivery costs and their effect on sales costs and profits. Profitable sales are the only worthwhile sales. And the cost of delivery—more than any other factor—determines the profit in any given sale.

(To Be Continued)

MOTOR COACH LEADERS DISCUSS INSURANCE AT SPOKANE, WASHINGTON

Spokane, Wash., June 19.—The semi-annual conference of the Motor Coach Association of Washington was held here recently, with Barney T. Peyton, vice-president of the association and general manager of Union Pacific Stages, Inc., presiding.

Practically all operators in eastern Washington attended, while a delegation of twenty from western Washington made the trip to Spokane in a special new Mack semi-double decker, used on the Seattle-Portland run of the North Coast Lines.

Jesse Kuhns, manager of Olympia-Grays Harbor Transportation Company, gave a detailed talk on insurance for buses for public liability and property damage. He advocated giving a big volume to one company through the association, so that lower rates would be obtained. President Newton of Everett, who was present, was instructed to appoint a committee to investigate the plan and to report at the annual convention in December.

Mr. Peyton made a report covering party or group rates on buses. He urged uniform charges and regulations, so that one operator would not infringe upon another, and so that the same rates would be quoted.

C. B. Fitzgerald, president of Washington Motor Coach System, discussed legislation. He pleaded for a closer relationship, so that lawmakers would understand the difficulties that beset the bus operator and the struggle to make a success of the business, due to all forms of competition.

FLORIDA BILL WOULD RAISE MOTOR VEHICLE LICENSE FEES

Tallahassee, Fla., June 19.—A bill to increase motor vehicle license fees on an average of 33 per cent. has been passed by the Florida House of Representatives. Revenue will go to public free school funds.

AUTOCAR ADDS 7½-TON TRUCK CHASSIS

Ardmore, Pa., June 19.—A new 7½-ton truck chassis, the model CE mounted on a 172-inch wheelbase, and priced at $6,000, has been added to the line of the Autocar Company. The chassis' weight is 10,500 pounds.

The engine has a 4½-inch bore and 4¾-inch stroke, with a displacement of 453 cubic inches, and is rated at 48.6 h. p. It develops 101 h. p. at 2,400 r. p. m. Stromberg carburetor and a vacuum tank are used. The electrical system is made by Delco-Remy.

The Long clutch is used. The four-speed transmission and the double reduction rear axle are the company's own make; the radiator also is made by the company.

Spicer universals, Ross steering, Delco-Remy electrical system, Lockheed internal four-wheel hydraulic brakes, with vacuum booster are used.

ILLINOIS LEGISLATURE ADOPTS RESTRICTIVE MEASURE ON TRUCKS

CHICAGO, June 19.—Restrictive measures against motor trucks in Illinois came a step nearer to becoming a fact when the state Legislature, in a last minute closing rush, passed a bill which previously had passed the House of Representatives limiting the length of trucks and trailers to forty feet after July 1, 1933, and providing that until that date the maximum length may not exceed sixty-five feet.

Another piece of legislation provided that after October 1 of this year motor trucks of capacity up to twelve tons must be equipped with pneumatic tires, three green lights in the front, three red lights in the rear and two amber lights on the sides.

Unless Gov. Emmerson vetoes these measures they will become laws of the state.

MACK TRUCK FACTORY PLANNED FOR CANADA

Toronto, Ont., June 19 (UTPS).—For several weeks representatives of the Mack Truck Company in the United States have been making visits to Toronto, and now it is announced that the firm has decided to make its product in Canada, and it is anticipated that the Canadian plant will be located either in or near this city.

An announcement to this effect is made by A. V. Harbun, general manager of Mack Trucks of Canada, Ltd. He said that the recent tariff amendments by the Canadian government had speeded up the decision of the company, although for some time it had been considering the idea of establishing a Canadian factory. The fact that a large percentage of the fabricated material built into Mack trucks had to be made under very special conditions in the Mack plants in the United States had been holding up action on a Canadian plant temporarily.

OHIO BOOSTS LICENSE FEES RADICALLY UPON AUTOMOBILES, TRUCKS

Columbus, O., June 19 (UTPS).—Radical increases in the license fees for both passenger and commercial automobiles in Ohio were made by the Ohio Legislature recently. The changes in fees were a part of the general revision of Ohio's taxation program. It is intended to produce about $24,000,000 annually, as compared with $14,000,000 under the former schedule.

The House of Representatives passed the bill June 11 and made a number of minor amendments, which have to be approved by the Senate before the bill becomes a law. It is believed there will be no trouble on that score, as the Senate had previously passed the bill by a wide margin of votes.

New fees range from $7 to $35, instead of $4 to $10 under the old schedule. Passenger cars up to 24 horse power are to pay $7 per year; from 24 to 28 horse power the rate is to be $10; from 28 to 32 horse power, the rate is $15; from 32 to 36 horse power, the rate is $25, and above 36 horse power the rate is $35.

Classified Advertising

Classified Rates 5c Per Word

FOR SALE

De Soto Double Face Electric Sign including flasher. Sign 6½ feet wide and 12 feet long, in splendid condition; used about 2 years. Sign originally cost $750. Will consider any offer. Drawings furnished on request. Jarman Motors, Inc., 301 W. 29th St., Baltimore, Md.

After a careful analysis, Cadillac now offers the profitable

CADILLAC - LASALLE FRANCHISE

in a few additional communities

A CAREFUL analysis of sales territory, undertaken as a result of Cadillac's recently enlarged market, reveals that a few *additional* communities may now obtain the Cadillac-La Salle franchise.

Preparation of this list of new sales outlets has been made in accordance with Cadillac's policy of restricting its franchise to communities where profitable operation is assured. The list naturally is limited, because Cadillac is interested only in points where adequate financial return for the dealer may be expected.

Every important factor concerning a dealer's financial success has been considered in making this analysis. Profit potentialities, capital requirements and the exact form of franchise to be granted comprise a part of the complete information gathered by the Cadillac Motor Car Company. This initial care in providing for the welfare of its dealers reflects the consideration given Cadillac dealers in all their relations with the company.

Of equal importance to accepted applicants for the Cadillac-La Salle franchise is the new, wide market opened by Cadillac's expanded manufacturing program. Complete coverage of the fine-car field provides approximately 40,000 additional buyers to be distributed among Cadillac-La Salle dealers annually. Cadillac-La Salle values are outstanding and give the dealer four lines of cars with which to interest and sell the man who pays $2195 and more for an automobile.

If you believe that you have the qualifications to operate a Cadillac-La Salle dealership, write to the Cadillac Motor Car Company for information concerning these available dealer points.

CADILLAC MOTOR CAR COMPANY

Detroit, Michigan

DIVISION OF GENERAL MOTORS

Carburetor Tests Require Metering Accuracy and Speed in Manipulation

New Carburetor for Tests on Fuel Research Detonation Engine Has Four Float Bowls; Flexibility For Wide Range of Testing Conditions Expected

By C. S. KEGERREIS
Consulting Automotive and Mechanical Engineer, Toledo, O.

The following, in part, is a paper presented before the annual summer meeting of the Society of Automotive Engineers at White Sulphur Springs, W. Va.:

Designing carburetors for single-cylinder engines presents a different problem than where multi-cylinder construction is used. In addition, where detonation is measured, the metering must be more accurate, inasmuch as the same point of operation must be repeated over and over again. Constancy of mixture ratio at the various engine loads, constant speed, is desirable. Of more importance, however, is the ability to repeat any one mixture ratio or any one engine operating condition. This necessitates a thorough mixing of the fuel and air so that each combustion stroke will deliver more exactly the same detonation value. We realize, of course, that in an internal-combustion engine the last is an impossibility.

In comercial carbureors the accuracy of metering is a somewhat lower order. Maximum power is developed over a broad mixture-strength range. Maximum thermal efficiency is developed over a somewhat narrower, yet sufficiently broad range, that a variation of between 5 and 8 per cent. is permissible. For measuring detonation a maximum variation of 2 or 3 ml. on the gas-ebulition scale is permitted. This means an accuracy of metering of about 2 or 3 per cent. Consequently, extreme care must be exercised in each factor in the design of such a carburetion instrument.

Manifold Design

Long manifolds, particularly where wet mixtures are used, cause irregular operation or surging as far as speed is concerned. Where these manifolds are heated, this condition is improved. Tests prove the shorter the distance between the valve and the carburetor nozzle, the more constant the speed. Tests made at 40 deg. F. proved that manifolds longer than between three and four inches gave unsteady operation. On the L-head engine, a downdraft short manifold was entirely satisfactory. The velocities were kept reasonably high and, with the warm port-walls no excessive puddling was experienced. These tests were made with a reasonably low-grade fuel and showed no necessity of preheating the air or mixture.

Cold operation is very essential because of vapor and air-lock conditions experienced in carburetors.

Range of Adjustment

A broad range of adjustment is necessary for accurate testing. For small fuel consumptions a simple needle valve in the fuel channel is entirely too sensitive. This valve will normally be open only ½ to ⅞ of a turn. Any clearance in the threads or inaccuracy of the needle and orifice will even aggravate this sensitiveness. Usually an air bleed is not as sensitive, consequently building some design that could be adjusted by the air-bleeding method, rather than operating on the fuel flow directly, was desirable. The Anglo-American Oil Company had developed such an air-bleed carbureter for its use in detonation-measurement work. With this in mind, the Bureau of Standards constructed a trial installation and found that a range of adjustment of between two and three turns was allowable for those mixture-ratios giving maximum detonation and with sufficient range on each side of the peak.

The Dobbs Carburetor

The construction discussed is known as the Dobbs Carburetor and was built in the laboratories of the Anglo-American Oil Company. Fig. 1 illustrates a longitudinal section through the device. In functioning, the carburetor consists of two float-bowls, with a common fuel jet that is capped at its discharge end by an air-bleed passageway. At the air inlet an adjustment is placed to regulate the volume of air bleed over the end of the fuel jet. The exit of both jets is, of course, at the venturi throat. In this particular design the air adjustment is read by a radio dial and indicator. The butterfly throttle is adjusted and its position measured by the same means as the air bleed.

The adaptation of this carburetor with a single bowl with an extremely short manifold and the minimum distance between the but-

(Continued on Page 8)

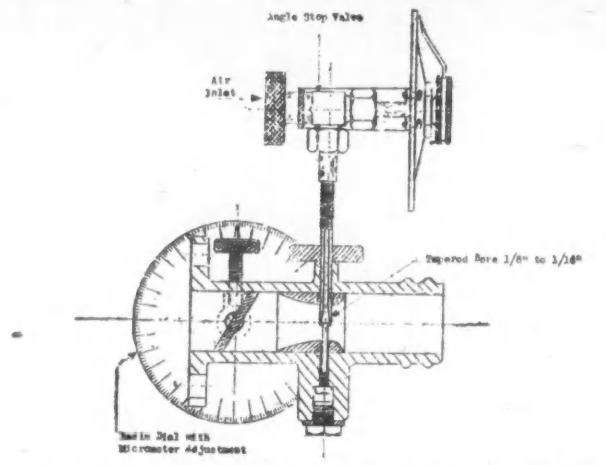

FIG. 1—Longitudinal section through the Dobbs carburetor

LUEDECKE WINS PROMOTION BY DEFIANCE SPARK PLUG

Indianapolis, Ind., June 19.—Announcement has been made here of the appointment of H. J. Luedecke as district manager in Indianapolis for Defiance Spark Plugs, Inc., Toledo, O.

UNITED BOSCH NAMES DEALERS, DISTRIBUTORS

New York, June 19.—The United American Bosch Company announces the following appointments:

Service station: Magneto Specialty Works, 1541 Cleveland Place, Denver; A. W. Berry & Sons, Loch Haven, Pa.; Gheen Battery Service, Sunbury, Pa.; Dolecek & Ochs, Russell, Kan.; Bloomfield Battery and Ignition Service Station, 688 Bloomfield Ave., Bloomfield, N. J.

Spark plug wholesaler: Auto Electric Company, 240 East Miner Ave., Stockton, Cal.; Auto Electric Service Company, Harrisburg, Pa.

AMERICAN RUBBER PRODUCTS PLANT IN JERSEY CITY SOLD

Jersey City, N. J., June 19.—Mark Townsend, Jr., receiver of the Voorhees Rubber Manufacturing Company and the American Rubber Products Corporation, has sold the latter's plant at the northeast corner of Henderson and 8th Streets, to William Noble. The building is a four-story concrete factory on a plot having a Henderson Street frontage of 100 feet and a depth of 250 feet along 8th Street. The price was not made public. The property is assessed by the local authorities for taxation purposes at $101,200, of which $37,200 represents the value of the land and $64,000 the building.

CHRYSLER SALES EVENT IN NEWARK PRODUCTIVE

Newark, N. J., June 19.—The June sales contest at the De Cozen Motor Company, Chrysler distributor, during its third week, showed some real signs of competitive bidding for first place, according to Albert De Cozen.

"The men have settled down for some intensive selling for the fourth and last week," he says, "and each day numerous changes are being made on the chart on which is indicated the position of the men.

"Eighty per cent. of the men to date are within striking distance of the quota, and the balance can easily attain the goal by a few well directed hits. It looks like a whirlwind finish," continues Mr. De Cozen, "but it is still too early to pick a winner."

MULLINS STAMPINGS
FOR THE AUTOMOBILE INDUSTRY

WRITE!
Mullins Mfg. Corp., Salem, Ohio
332 So. Michigan Ave., Chicago.
General Motors Building, Detroit.

FINAL REVISION, COMPLETE NEW PASSENGER

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Some of this data has been published previously, but it is given here complete for the convenience of our subscribers. Readers desiring

In this table 48 states and the District of Columbia **Returns for to**

Comparative figures for April, 1930,

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle	Lincoln
Alabama	1	3	76	5	799	28		15		27		7	915		7		12	5	1
Arizona	1	1	12	1	87	7		5		10		4	162			2	1	1	1
Arkansas			16	7	394	24		5		57	2	4	340	1	11	1	3	1	
California	523	47	895	149	4096	427	7	344	2	453	99	196	5477	25	186	140	157	64	28
Colorado	36		175	4	975	50	3	13		85	31	54	746		22	45	12	2	6
Conn.	94	4	348	67	1198	154	2	127		191	6	177	1214	16	58	93	69	27	8
Delaware	4		39	5	207	23				6	11	17	236	4	1	9	5	7	1
Florida	29	12	88	6	908	83	4	11		40	7	64	939	9	44	36	13	3	5
Georgia	13	8	109	13	1054	70	2	21		63	2	26	1216	3	10	18	24	5	2
Idaho	7	1	16		245	14		16	2	24	2	10	210	1	6	4	1		
Illinois	408	20	719	139	4611	440	33	242	7	608	38	366	5179	21	115	152	196	98	58
Indiana	195	7	369	36	2880	254	17	241	1	322	22	306	2552	6	59	111	90	21	14
Iowa	50	5	181	12	2501	151	5	46	1	200	35	147	1872	1	36	83	41	8	6
Kansas	11	8	121	9	1446	47	2	19		116	13	104	1171	1	16	59	13	6	2
Kentucky	31	3	71	1	1303	120	3	52		139	10	86	1104	2	16	20	34	1	6
Louisiana	13		41		672	45		23		59	1	20	788	2	4	16	16	2	3
Maine	14	1	149	15	750	67		21		85	6	230	824	6	23	76	29	10	3
Maryland	41	1	138	15	1342	87	5	35		62	16	87	1133	5	26	41	43	10	3
Mass.	263	10	897	105	3267	394	9	59	2	443	42	818	5311	62	96	258	172	94	18
Michigan	200	5	666	104	4210	353	7	171	53	473	44	546	4713		82	197	80	42	28
Minnesota	72	7	222	21	2956	224	5	46		155	18	165	2129	3	66	80	80	17	7
Miss.	1	1	23		560	21		3		25		6	623		2	1	11	2	
Missouri	75	9	227	21	2656	134	5	55	1	201	20	124	1941	8	53	47	44	14	11
Montana	7	4	37		358	37	1	19		22	11	29	366	1	2	12	9	1	
Nebraska	12	4	111	1	1418	66		18		77	7	52	1203	1	18	19	16	4	3
Nevada	2	1	8	1	69	18	1	3		8	5	5	77			5	3	1	1
N. Hamp.	18		104	11	467	51		15	1	35	6	73	576	4	15	37	19	4	3
New Jersey	329	8	727	97	2900	428	8	131	4	274	41	263	2803	30	106	144	124	58	16
N. Mexico	1	4	42	4	233	16		2		20	9	1	149	1	1	4			2
New York	1051	29	2436	412	8490	1427	46	562	7	884	83	1044	9359	105	344	420	442	201	141
N. Ca'lina	17	7	73	9	1129	92		22	2	84	2	68	1415		12	30	3	3	1
N. Dakota	6		42	2	571	23		7		32	3	7	464		8	4	3		1
Ohio	416	9	595	103	5220	509	15	387	1	437	63	517	5095	42	147	187	169	60	30
Oklahoma	8	3	125	8	1314	47	2	14		106	3	18	919	3	10	16	8	7	1
Oregon	17	4	66	6	627	53		31		42	42	15	603	5	36	11	6	4	1
Penn.	404	20	1075	126	5745	764	10	320		689	63	629	5141	65	218	225	264	94	38
Rh. Island	41	1	115	15	462	91	1	61		94	6	73	505	8	31	22	26	18	7
S. Ca'lina	1	8	46	3	735	38	2	38		43		25	642		3	8	16	2	
So. Dakota	7	1	35		440	28		14		53	15	10	344		8	8	9		
Tennessee	18	4	91	4	1395	45		14		67	3	38	1149	4	20	18	20	7	6
Texas	16	26	385	20	3318	229	4	123		235	11	72	3077	4	58	44	57	15	9
Utah	8	1	42	5	294	19	1	7		35	7	14	283	2	20	12	14		
Vermont	16		83	7	286	44		12		49	3	73	319	3	4	31	18	4	1
Virginia	23	5	112	5	1465	94	1	36		99	9	88	1365		25	30	40	4	2
Wash.	35	6	130	7	703	85	3	93		80	29	42	868	3	24	19	47	5	2
West Va.	37	6	72	7	827	102	2	30		114	1	64	830		36	15	19	4	1
Wisconsin	101	8	316	18	2150	157	7	86	9	231	25	212	1796	7	51	69	37	18	5
Wyoming		1	11		190	12		1		25		18	157		1	11	6		
Dist. of C.	51	1	111	8	880	53	2	33		94	9	56	1157	6	32	17	41	13	8
Totals	4724	314	12588	1614	80743	7745	222	3642	93	7773	881	7070	81457	470	2169	2907	2562	968	490

S. A. E. Technical Discussion Centers Around the Chassis

(Continued from Page 2)

your first question, that curve was plotted from Tire Member Association data and is recommended pressures for the particular tires in question. It does take account of the change in inflation pressure, but it does not take account of the increase in inflation pressure necessary to enable the use of the same size tire with a smaller rim for the same tire service. In other words, if you are going to change, for instance, from a 20 to 18, you would have to over-inflate higher than the standard adopted in the curve if you were to get the same tire performance.

Mr. Olley: What I meant was, suppose you have been using a 20-inch wheel on a 6½-inch tire and you find from that chart that a 17-inch wheel requires a 7-inch tire, that means that it requires the 7-inch tire at the lower or recommended inflation pressure.

Mr. Brown: That is right.

Mr. Olley: The other thing was the dampening.

Mr. Brown: On dampening, while there is a very definate hysteresis loop shown on the curve where we took the complete loop at high speeds, the dampening is so small in comparison with the energy available that the effect is practically negligible. The dampening appears to be quite largely a function of the properties of the amount of the compound of carcass—the insulation, I believe, it is quite generally called—between the pies and between the individual cords in the carcass. In any event, it is almost infinitesimally small from a practical viewpoint.

Mr. Olley: May I put the question in another way? We have an idea that in changing from the old-fashioned prewar tire to the new-fashioned longer life tire, we have increased tire life at the expense of riding comfort because we have thrown away the dampening friction which used to be valuable to our riding and destructive to the tire. Do you agree that that is so?

Mr. Brown: I can't concur in that thought. While there is unquestionably the bureau of standards' work on tires that brings that out quite emphatically, while also there is a very appreciable difference between the old fabric tires and the modern cord tire, it is relatively small from a damping point of view even that large difference, which brings up the point too that wholly this riding comfort situation from a tire point of views relatively small compared to serviceability, to operate at high speed, cost, even appearance, but it is one of those things that we should know about.

There is only one reason for a tire when we get all the superfluous material discounted, and that is to give an easy ride, and while it may be minor compared to these other factors, ability to operate at high speed, ability to operate on long miles, etc. It is one of those things we should know instead of guessing at, and it was with the hope of providing the engineers, automotive engineers, actual fact performance charts whereby they could define their decisions regarding the optimum tire size for their particular job that we did this work.

K. D. Smith: I would like to ask Mr. Brown if, in connection with this work, he did anything along the lines of checking different rim widths and their amount of deflection with the same size of the tire. In one chart that was just discussed there were different sizes of tire, I assume on their recommended rims. There has been a great tendency recently to use wider rim widths, and I wonder what he has found the effect of that was on the deflection.

Mr. Brown: The effect is definitely pronounced; in fact we ran for the sake of uniformity this series of tests with the same rim width, and it gave us a curve which was grotesque to say the least. It appears that the present practices is surprisingly close to the optimum in right widtn from a riding comfort solely. If you make a variation of an inch, either wider or narrower (of course, narrower would not be practical in the four-inch lengths), it makes a very appreciable difference. The technique described will, if carried through for your particular situation definitely answer any question in reference to rim width.

K. D. Smith: I don't think Mr. Brown has entirely cleared that up in the minds of some of the tire engineers. I think it is an important point, because today we have some small sized passenger cars, for instance, 475 nominal section tire being used on a rim which is 3 inches between flanges, and at the same time some of the car manufacturers put tires on the car as large as 650 mounted on rims that are 269 between flanges. I am afraid that the car engineers do not appreciate the difference this makes in riding comfort, the use of different rims.

Mr. Brown: There is no doubt at all that this point is extremely well taken, particularly so in reference to the narrower rims, meaning under 4 inches, under 3½ inches certainly. The narrower rims affect these curves that I have shown you very appreciably.

Chairman Marks: Of course, we are in the unfortunate position on that particular question, as we very often are, and that is by making the wider rims you at the same time add to your unsprung weight, so it looks as though you have another compromise problem on your hands.

K. D. Smith: I think you will find it also true, we have been able to make tires so that you could use lower flanges in rims to somewhat compensate for that extra width, and that has been in the minds of the tire engineers and that is why they have advocated wider rims. I think along with that you get another feature of stability, particu-

(Continued on Page 8)

CAR REGISTRATION STATISTICS, APRIL, 1931

Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies

day: Oklahoma

will be published in a coming issue

States	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Alabama	12	17	3	10	4		1	28	34	8	30			4	34	1		2,087
Arizona		8	1	7	2			8	4		12				2	1		340
Arkansas		14	1	9	3			21	24	1	9			3	11	1		964
California	13	284	105	243	105	7	41	127	412	57	627	2	6	20	195	83	13	15,655
Colorado	12	50	16	43	8		2	48	95	13	58	1		13	65	4	1	2,688
Conn.	14	130	60	119	67		18	60	278	25	131				62	17		4,834
Delaware	1	13	4	22	10		1	6	40	1	3			2	9	3		690
Florida	4	17	11	25	11		3	39	100	7	31			1	21	3	1	2,575
Georgia	2	24	7	40	6		5	23	70	7	44			2	13	2		2,904
Idaho		11	5	9				17	19	4	16			1	7	1		649
Illinois	41	400	124	720	172	40	45	258	805	51	502	12		18	273	66	27	17,004
Indiana	35	110	59	385	39	5	11	212	427	25	265	4	2	73	217	19		9,391
Iowa	7	75	30	178	17			120	366	16	101	1		15	201	14		6,522
Kansas	13	45	21	63	10	4	2	59	214	7	66	1		13	86	9		3,777
Kentucky	9	17	15	28	2		3	96	70	10	45		1	11	82	11		3,402
Louisiana	9	47	2	34	3	2	2	26	41	2	29	2			10	2	1	1,917
Maine	4	81	35	92	14		3	63	186	15	82			3	63	7		2,957
Maryland	3	56	57	69	18	8	10	83	182	4	74			2	68	11	3	3,738
Mass.	24	498	101	417	168	10	86	161	654	71	336	1		4	200	79	1	15,131
Michigan	45	106	96	612	62	4	2	135	686	80	168		1	11	165	19		14,166
Minnesota	6	118	30	236	41	2	10	235	361	26	178		1	19	253	22	5	7,816
Miss.		25	2	5	3			11	21		16			1	6	1		1,310
Missouri	31	127	52	159	25	5	28	149	276	11	108	1	3	22	136	26	81	6,886
Montana	3	23	4	18				27	49	4	22		1	3	36	2		1,108
Nebraska	1	25	10	68	3			90	140	1	118			14	91	17	2	3,610
Nevada		2		6	3			3	3		5				4	1		235
N. Hamp.	3	60	13	64	17	1	4	37	103	6	40			1	50	5	1	1,844
New Jersey	25	336	106	413	121	12	55	94	453	46	296	1		4	179	92	5	10,729
N. Mexico	1	9	3	12	2			4	12		7		1	2	13	3		558
New York	76	1094	313	1271	355	25	141	543	1404	151	977	8	7	69	730	267	25	34,939
N. Ca'lina	2	15	1	47	8		2	53	97	1	20			3	26			3,249
N. Dakota	3	19	3	25				25	55	2	27		1	10	57			1,400
Ohio	83	336	157	589	118	44	34	359	925	67	336	7	3	29	525	119	3	17,736
Oklahoma	3	14	16	33	8		7	36	105	2	36			5	25	7		2,909
Oregon	2	35	10	42	6		4	32	61	8	54			4	17	7		1,851
Penn.	72	456	187	659	167	22	42	449	843	55	454		8	35	480	113	15	19,947
Rh. Island	2	44	19	30	18	4	11	29	139	25	54			1	28	6	1	1,988
S. Ca'l na		6	7	18	3		1	21	49	2	19				9	1		1,746
So. Dakota		15	7	51	2			48	26		25			14	27	3		1,190
Tennessee	2	23	8	50	11		3	53	66	6	66			2	50	4	1	3,248
Texas	13	65	15	76	29	1	16	120	210	22	153		1	7	105	12	1	8,549
Utah		27	7	6	4		1	5	30	5	16		1	1	19	1		887
Vermont	1	42	14	37	6		2	51	50		7				47	3		1,213
Virginia	14	29	29	35	17		4	50	192	9	42		1	3	39	11		3,878
Wash.	4	16	17	70	14		2	57	95	9	72			8	56	11	1	2,613
West Va.	3	35	21	41	15		4	83	151	12	40			5	91	6		2,674
Wisconsin	13	208	83	207	25	2	10	108	338	11	181	1	3	19	193	17	5	6,727
Wyoming		6	2	8				11	11	3	14				5			493
Dist. of C.	7	46	23	86	36	16	8	22	97	3	62			1	21	7	1	3,008
Totals	618	5259	1912	7487	1778	214	624	4395	11069	891	6074	42	41	478	5102	1122	194	265,732

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Carburetor Design for Fuel Research Engine

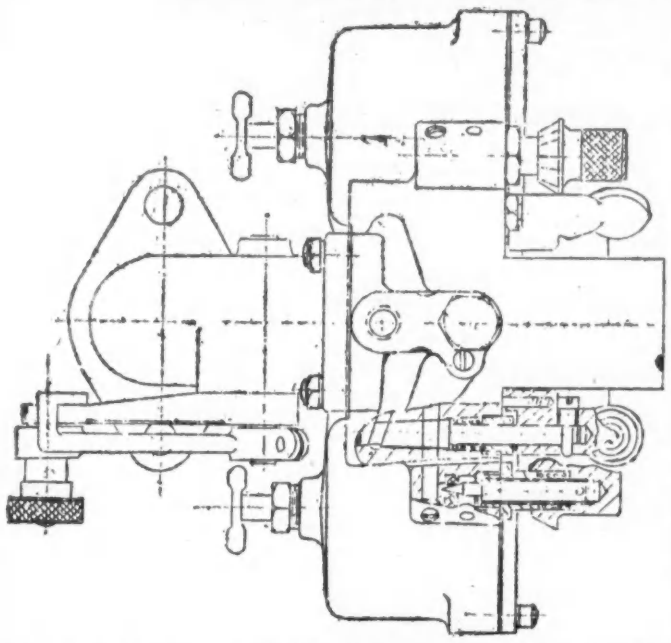


FIG. 2—First design of carburetor for detonation testing with the co-operative fuel research engine

(Continued from Page 6)

terfly throttle and the nozzle, gave pleasing results.

Speed in testing is of prime importance in regular routine work, and to attain this, two float bowls are absolutely necessary, and preferably two other bowls to carry additional reference fuels, each bowl being a carburetor in itself. Thus once an adjustment is made on a definite fuel, a switch-over is made to the next fuel in order, and its maximum detonation point measured. Once this is accomplished, then the switching from one carburetor to another for checking is effected in short order. To insure the minimum length of fuel passage the downdraft type of carburetor was chosen. To care for the research installation where two bowls only were necessary, the main fuel and air passageways were built around them. For the routine type, the two additional bowls with proper connecting passageways were designed. Thus, if a research type only is purchased, the auxiliary bowls for routine testing can be added at any time. The construction of this initial design is illustrated in Fig. 2, and that of the four-bowl or routine test type in Fig. 3.

the fact that the butterfly throttle was extremely sensitive to throttle position or throttle angel.

Proposed Design

Following the criticisms from various sources, the preliminary design was changed to that illustrated in Fig. 4. In addition to the reduction of the mixture passageway, the air horn was lengthened to eliminate the fuel spraying back from the air horn entrance. Also easier operated switch-over cocks were installed. The throttle was changed to a barrel type, operated by a worm and gear, to relieve the sensitivity of the adjustment. The new construction required thirteen turns of the throttle knob to rotate the cylindrical barrel through its full opening. An indicator arm operated by the throttle shaft was placed on the throttle quadrant to repeat throttle position more readily. Several other minor details were changed.

To insure reliability of performance, ten carburetors were built experimentally for checking. Information accumulated in the ten devices showed erratic operation, duplication of results, even in the same

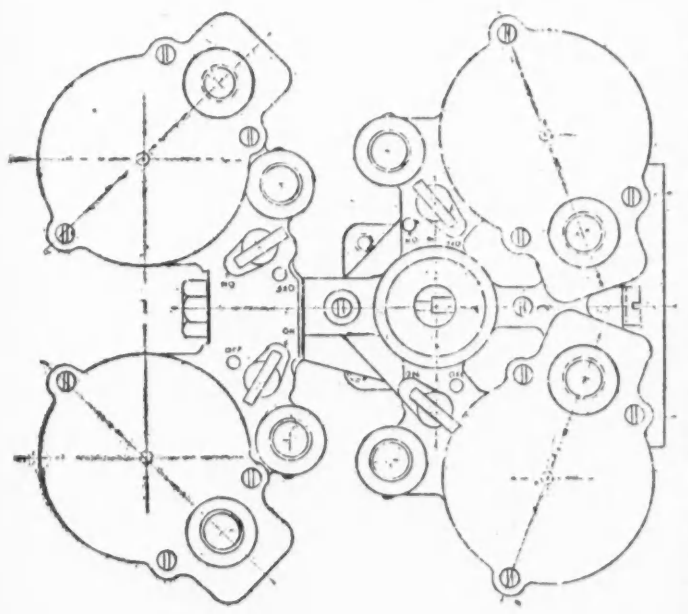


FIG. 3—Preliminary design of the routine test type of carburetor, which has four float bowls

Complete testing of this one instrument proved that better operation was accomplished by reducing the manifold diameter, also the mixture passageway was reduced materially, with better results. The departure from commercial sizes lies mainly in the fact that the standard speed of this engine is 600 r. p. m. Further checking brought out carburetor being found difficult. The trouble was located in the conical switch-over cocks. This delayed the program somewhat, in order to replace with a new type the defective valves in the first ten experimental carburetors. Separating the fuel and air channels by

(Continued on Page 12)

PRICE SHADING HALTED IN SHEET STEEL SALES OF MAHONING VALLEY

YOUNGSTOWN, O., June 19.—Announcements by various steel companies that the prices of sheets of various types have been marked up $1 to $5 a ton are of growing interest to automobile manufacturers.

A long period of price concessions by various producers in the steel industry apparently is near an end. The additional cost of steel going into automobiles can easily be absorbed by the motor industry, since the sheet price increase would amount to not more than several dollars per car.

Sentiment against price-shading apparently is stronger than at any time this year, following a long period in which constantly declining prices have failed to bring out new business of any consequence.

Increased sheet mill activity, now under 40 per cent. in the Mahoning Valley, is expected to develop as higher quotations on sheets go into effect. Agreement that the firmer price stand on sheets and on other products must be adopted is felt by such valley producers as Republic Steel Corporation and Youngstown Sheet and Tube Company. Other smaller sheet manufacturers in the valley are following the general advance on sheets.

Steel plant operations in the Youngstown district at mid-week had tapered to 40 per cent., off 2 per cent. from the previous week's schedules. Carnegie Steel Company ingot production was down 5 per cent. to the 40 per cent. level.

BYLAWS FOR PROPOSED FEDERATED M. E. A. TO BE DISCUSSED JUNE 23

New York, June 19.—Councilors of the three divisions of the Motor and Equipment Association will meet at the Stevens Hotel in Chicago on June 23 to discuss the by-laws for the proposed Federated Motor and Equipment Association.

The by-laws, as prepared by special committees representing the jobbing and manufacturing groups of the Motor Equipment Association membership will create a Motor and Equipment Wholesalers Association and a Motor and Equipment Manufacturers Association, both of which will be component parts of the Federated Motor and Equipment Association.

The meeting of the councillors of the present divisions A, B and C will be followed by a meeting of the board of directors on June 24.

CRUDE OIL PRODUCTION OFF 11,850 BARRELS DAILY

New York, June 19.—The American Petroleum Institute estimates that the daily average gross crude oil production in the United States for the week ended June 13, 1931, was 2,463,100 barrels, as compared with 2,474,950 barrels for the preceding week, a decrease of 11,850 barrels. The daily average production east of California was 1,934,500 barrels, as compared with 1,945,850 barrels.

Imports of petroleum (crude and refined oils) at the principal United States ports for the week ended June 13, totaled 1,927,000 barrels, a daily average of 275,286 barrels, compared with 925,000 barrels, a daily average of 132,143 barrels for the week ended June 6, and a daily average of 213,464 barrels for the four weeks ended June 13.

DE VAUX DEALER GROUP TOTALS 545 IN 11 WEEKS

Grand Rapids, Mich., June 19.—Norman De Vaux, president of De Vaux-Hall Motors and Col. E. J. Hall, vice-president in charge of engineering, addressed a special sales meeting of approximately 100 De Vaux salesmen from western Michigan here Wednesday.

Growth in the De Vaux sales organization was shown by the increase in De Vaux dealers to number 545 in eleven weeks. The company hopes to have 2,000 dealers within 90 days, De Vaux declared.

S. A. E. Technical Discussion Centers Around the Chassis

(Continued from Page 7)

larly in the front wheels that should be stressed also. Dr. Moss presented his prepared paper.

D. C. Smith: It is very interesting to have these tests on the passengers rather than on the chassis. It is indeed a very interesting line of research. I would like to ask if the curves that were presented were taken from drivers or passengers and also if you have any percentage comparisons between the effect upon one who is driving as compared with a passenger.

Mr. Moss: These curves were a composite. The ones I showed gave one driver and either four or five passengers in the same car.

D. C. Smith: You have no percentages?

P. P. Pierce (Vacuum Oil Company): I would like to ask Mr. Moss a question. You stated that the fatigue seemed to be greater on the passengers in the front seat than in the rear, which seems to be quite the contrary to our ordinary conception. This is probably due to the driving condition and the strain on the eyes. I would like to ask if you tried to blindfold or tried the test on any one that is naturally blind to see if their fatigue was the result of eye strain from riding or from actual riding conditions of the car itself.

Mr. Moss: We did check that. We had three people on the front seat, the driver and two passengers, and we had the two passengers keep their eyes closed for 100 miles. That did not seem to do any good. As a matter of fact, it seemed to do more harm than good.

Mr. Pierce: Does driving against bright headlights have any appreciable effect?

Mr. Moss: Not very much. There is one thing that probably enters it that seems to cause a front-seat passenger to go up higher than a back seat, and that is the fact that you are seating in the front some people who have driven themselves and there is a tendency for them to put on the brakes even though they are not actually driving the car. You are not as liable to do that in the back seat as in the front and that may account for it; but there is a slighter increase in the front than on the back in the cars we have tested.

Walter C. Keys: That might be due to engine noise and I would also like to know what car that was because I have ridden cars that under certain circumstances were very uncomfortable in the front seat.

I believe that under certain conditions some cars give a better ride in the rear seat than in the front seat, and other conditions in the same car give a better ride in the front seat and not so good in the back.

Mr. Jacklin presented his prepared paper.

Chairman Marks: Are there any questions on Mr Jacklin's paper?

B. J. Lemon (United States Rubber Company): I would like to offer a few comments and to ask Mr. Brown a few questions which I presume he will answer.

I think that in a tire as it is used on passenger cars the leavening factor is the air pressure so far as the riding quality goes. It is even more elastic in our tables of inflations for various tire makers, and where we can measure differences of riding qualities with instruments. When you figure the difference in inflation when the car starts out when the inflation goes up and then comes down with one or two inflations per week inflation is a very important factor in riding quality.

M. L. Fox (Houde Engineering Corporation): Mr. Brown brought out the necessity of getting the period of the tire and the unsprung weight out of synchronism out of that of the body. There is another point that should be looked into, that the front and rear tire and unsprung weight have different periods, and these two periods may come in synchronism with each other as well as in synchronism with the body. One of the hardest things to eliminate in, you might say, riding quality is to keep these things away so that at certain speeds the car will not get to forward and rear pitching on certain roads. You may have a very good riding car in other respects, and this pitching element come in, which is simply a synchronism of periods between front, rear and body frequencies.

Mr. Jacklin: The shake table results, I think, show pretty definitely that this rate of set vibration should be between two and three per second, and none of you need instruments to test that out. All you need is a watch and a little practice in supporting your hand out in front of you like this. Don't hold your muscles too rigidly. Just hold your hand out there, and as you ride along the road count the number of times you go down or come up and compare that to your time and get a total number of cycles somewhere in that range. I think you are hitting pretty close to about as good as you can do.

I will be pleased to answer what questions I can on these records. One of the sets there is from one of the slides and the other is the result of operating the tires at 70 miles an hour.

The meeting adjourned at 12.20 o'clock.

S.A.E. MEETING ENDS WITH ALL SATISFIED; MUCH ACCOMPLISHED

(Continued from Page 1)

last night drew a large attendance and the attendance at all technical sessions has been one of the outstanding features of the entire meeting.

The high spot of the week perhaps was the future developments session and the discussions of engines in the rear, the teardrop car and high speed driving. There is ample evidence here that engineers are seriously studying the advantages and disadvantages of rear engine cars and this design is so closely linked with the tear drop body design that the two sessions were practically merged in the discussions. There is reason to believe that cars of this type are not far in the future.

Among the new devices brought here by engineers for experiment and display is a new shimmy and front wheel fight eliminator developed by Firestone Tire and Rubber Company. This device consists of two weights mounted on springs steel arms and attached to the front frame horns through a rubber mounting. The weights extend about four inches on either side of the frame and are made to conform to the contour of the bumper. This damper is said to stabilize the entire front end of the chassis and eliminate wheel fight.

Another new development being shown is the fireproof celluloid interior trimming which will soon be available for steering wheels, choke and shutter controls, door handles, etc., in colors to match the interior trim or to harmonize with exterior color combinations. The material is the same as that used in fountain pen bodies and offers a hard, smooth finish to be moulded over wood, rubber or steel cores. This material is being manufactured by the Celluloid Corporation of Newark, which is also offering a new pearl dope for lacquer finishes which attracted considerable interest at the meeting.

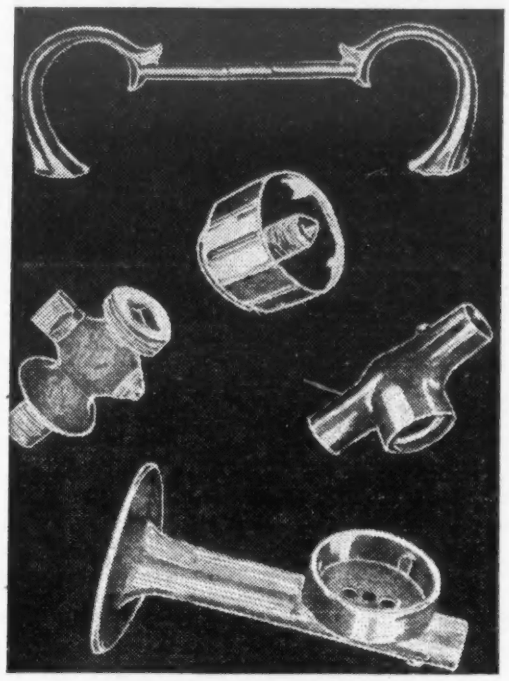
Still further developments in spring suspension are to be expected soon from the Firestone group. This type of springing has not been perfected to the entire satisfaction of the experimenters, but it is expected to be quite radical.

Yesterday's aircraft demonstration was so successful that traffic was completely jammed between White Sulphur and Caldwell. The autogiro sent here from Washington was, of course, the main attraction in the section due to the fact that it was making its initial bow here in this section.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

Production--Engineering--Factory

Doehler Develops Method Of Die-Casting Brass



SOME EXAMPLES of die-cast brass

A new process by means of which it is possible to die-cast brass castings has been announced by the Doehler Die Casting Company. In the development of the process it was found that brass die-casting requires (a) the handling of the metal at the lowest possible temperature, (b) the removal of the finished casting from the die in the shortest possible time. The application of these principles have resulted in the successful production of brass die-castings on a commercial basis.

In order to accomplish the practical application of the conditions mentioned it is necessary to perform all operations on the casting machines mechanically and in fixed synchronism. But a fraction of a second is required between the time the metal is placed in the machine and the time it is filling the impression and in a similarly short time thereafter, the die is opening, the cores are being removed and the casting is being ejected.

Many intricate parts which formerly presented difficulties, or were costly to produce, and parts previously made in separate units and soldered can now be cast in brass in a single operation. Examples of some of these die-cast brass products are shown herewith.

Free Wheeling Available Now On All Graham Models

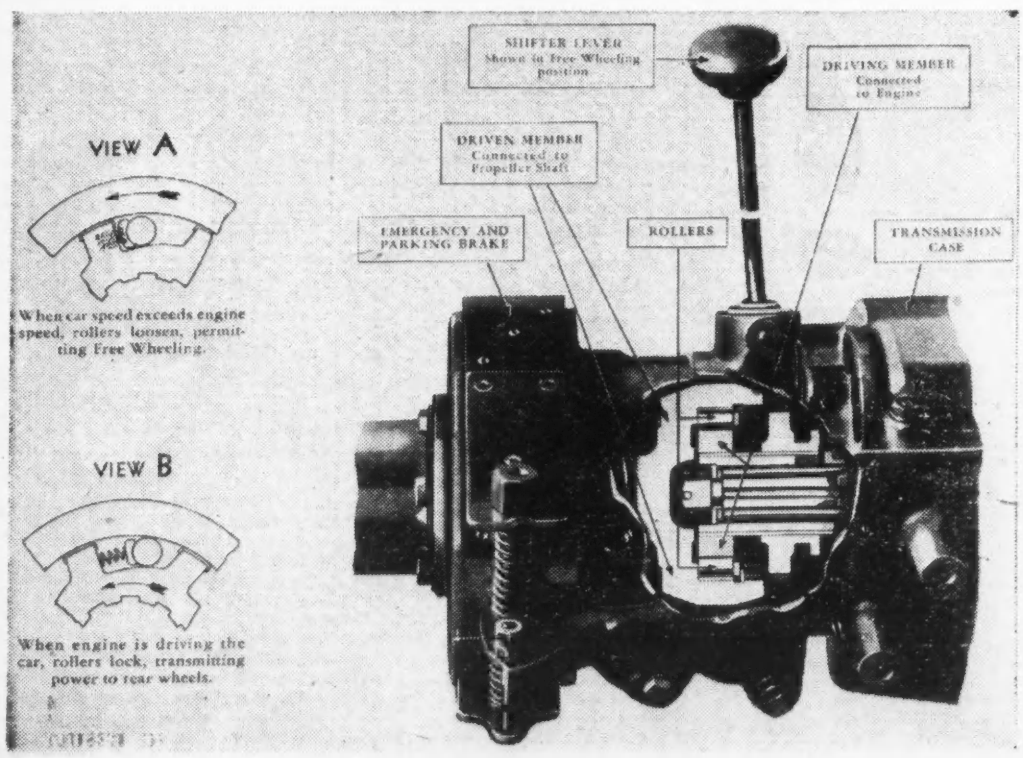
(Continued from Page 1)

free wheeling, it is stated, will have greatly improved performance in the first and second speeds, since it will be impossible for the driver to cause a bucking or surging effect through improper operation of the throttle and the clutch.

Graham free wheeling is obtained without any transmission changes. A separate compact unit, rigidly attached to the rear of the transmission housing, comprises the device. A control lever projects above the floor boards within easy reach of the driver.

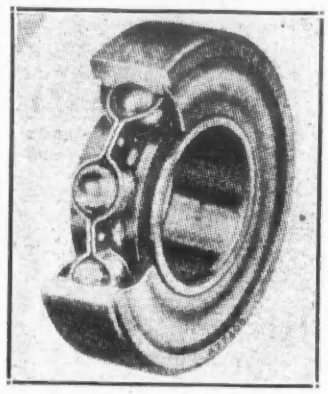
In the Graham unit, the free wheeling effect is obtained through the use of an overruning roller clutch. Six separate rollers, each in its own groove, are used instead of groups of rollers graduated in size operating in single grooves. When the car is free wheeling, the rollers permit the propeller shaft to run at a faster speed than the transmission shaft, so that the engine may slow down to idling speed. When not free wheeling, the transmission shaft and the propeller shaft are positively coupled, the car then operates in the conventional manner, and the braking effect of the engine is available.

For backing, free wheeling must be made inoperative. This is taken care of automatically by an interlocking device which cuts out free wheeling when the transmission gear shift lever is moved into reverse. Thereafter the car remains in positive drive until the driver again elects to free wheel.


SHIFTER LEVER
Shown in Free Wheeling position
DRIVING MEMBER
Connected to Engine
DRIVEN MEMBER
Connected to Propeller Shaft
EMERGENCY AND PARKING BRAKE
ROLLERS
TRANSMISSION CASE
VIEW A
When car speed exceeds engine speed, rollers loosen, permitting Free Wheeling.
VIEW B
When engine is driving the car, rollers lock, transmitting power to rear wheels.

Sectional view of Graham improved free wheeling unit

HOOVER ANNOUNCES DOUBLE SEAL BEARING



HOOVER Lubriseal bearing

A double Lubriseal bearing under the trade name of Duoseal has been announced by the Hoover Steel Ball Company, Ann Arbor, Mich.

The Duoseal bearing consists of the standard annular bearing with stamped metal plates on each side of the raceway. These plates are fitted tightly to the outer ring and remain stationary with it. The inner edge of the plate fits a special groove in the inner ring, allowing it to turn freely with the shaft and at the same time maintaining an effective seal.

Formula for Calculating Belt Conveyor H. P. and Stress

Information given, herewith, constitutes data sheet No. 2 of a series being prepared by the Link-Belt Company, Chicago, Ill.

The following formula is given for the calculation of h. p. required to drive the belt, taking into consideration the weight of the belt.

Horse Power Data

$$H.P. = \frac{KL}{1000} \times \left(T + \frac{SB}{16} \right) + \frac{TH}{990} + P$$

where
- K—Power constant from Table "A."
- L—Length of conveyor (pulley centers) in feet.
- T—Tons per hour of material.
- S—Speed of belt in feet per minute.
- B—Weight of belt in pounds per foot (Table "B").
- H—Vertical height or rise of conveyor in feet.
- P—Horse power required for tripper (Table "A").

To the above calculation for conveyor horse power add—

For horse power consumed by the terminals (head and foot shafts only): Twenty per cent. for conveyors under 50-foot centers, 10 per cent. for conveyors under 100-foot centers, 5 per cent. for conveyors under 150-foot centers.

For horse power consumed by counter-shaft drives: Ten per cent. of total for each speed reduction through cast-tooth gears, 5 per cent. of total for each speed reduction through cut gears.

Table "A"

Width of Belt	Value of "K" Plain Brgs.	Value of "K" Anti-Frict. Brgs.	H. P. for Tripper, "P" Plain Brgs.	H. P. for Tripper, "P" Anti-Frict. Brgs.
12	.149	.070	.75	.50
14	.144	.070	1.00	.75
16	.140	.070	1.00	.75
18	.135	.069	1.50	1.25
20	.132	.066	1.50	1.25
24	.125	.062	1.75	1.25
30	.117	.057	2.50	1.75
36	.109	.054	3.00	2.50
42	.102	.051	4.00	3.00
48	.097	.048	5.00	3.25
54	.092	.047	6.00	5.00
60	.090	.045	7.00	6.00

BELT STRESS

The result obtained from the horse power formula gives the operating horse power of the conveyor. It is not recommended to start a belt conveyor under load, but, where this is necessary, a motor of high starting torque, or slip ring type, should be used, or the size increased to take the additional starting load.

From the horse power obtained from the formula, the horse power pull of the conveyor can be obtained:

$$H.P.\ Pull = \frac{H.P. \times 33{,}000}{\text{Belt Speed}} = E$$

This horse power pull is not the actual working pull in the belt, but is the effective pull "E." To this effective pull must be added the tension in the slack run of belt necessary to maintain driving contact between the belt and the conveyor drive pulley. The effective horse power pull is, therefore, the difference between the working tension, T^1, and the slack run tension, T^2, or

$$E = T^1 - T^2 = H.P.\ Pull$$

The ratio of the working tension, T^1, to the slack tension, T^2, depends on the angle of contact of the belt on the pulley, and the co-efficient of friction between the belt and pulley, and is independent of the size of pulley. It is therefore, apparent that lagging the pulley to increase the co-efficient of friction, and increasing the arc of contact of the belt on the pulley by snubbing, avoids the necessity for increasing the tension on both slack and working sides (T^2 and T^1) to secure increased horse power pull. In other words, lagging and snubbing the conveyor drive pulley makes it possible to transmit more horse power to a belt without increasing the internal belt stress. The ratio is constant, so that:

$$\frac{T^1}{T^1 - T^2} = \text{a constant "C"} = \frac{T^1}{E} \text{ (since } E = T^1 - T^2)$$

$$T^1 = CE$$

These data sheets do not allow sufficient room for many tables, charts, etc., given in Belt Conveyor Data Book 1615, which will be sent free, upon request.

TABLE "B"

Approximate Weights of 28-Ounce Duck Rubber Conveyor Belt

Ply of Belt	Thickness of Top Cover Inches	Width of Belt, Inches 12	14	16	18	20	24	30	36	42	48	54	60
3	One-thirty-second	1.27	1.48	1.69	..	..	..	..	..	..	..	..	..
	One-sixteenth	1.51	1.76	2.01	..	..	..	..	..	..	..	..	..
	One-eighth	1.99	2.32	2.65	..	..	..	..	..	..	..	..	..
	Three-sixteenths	2.46	2.88	3.28	..	..	..	..	..	..	..	..	..
4	One-thirty-second	1.55	1.78	2.05	2.33	2.56	3.08	..	..	..	..	..	..
	One-sixteenth	1.78	2.08	2.37	2.67	2.96	3.56	..	..	..	..	..	..
	One-eighth	2.27	2.64	3.01	3.39	3.77	4.53	..	..	..	..	..	..
	Three-sixteenths	2.75	3.19	3.64	4.09	4.54	5.46	..	..	..	..	..	..
5	One-thirty-second	..	..	2.41	2.71	2.99	3.61	4.49	..	..	..	..	..
	One-sixteenth	..	..	2.71	3.05	3.41	4.07	5.09	..	..	..	..	..
	One-eighth	..	..	3.36	3.78	4.20	5.04	6.30	..	..	..	..	..
	Three-sixteenths	..	..	4.00	4.50	5.00	6.00	7.50	..	..	..	..	..
6	One-thirty-second	..	..	..	..	3.44	4.13	5.06	6.19	7.22	8.42	..	..
	One-sixteenth	..	..	..	..	3.84	4.61	5.76	6.92	8.06	9.4	..	..
	One-eighth	..	..	..	..	4.64	5.57	6.96	8.35	9.75	11.4	..	..
	Three-sixteenths	..	..	..	..	5.44	6.54	8.16	9.80	11.42	13.35	..	..
7	One-thirty-second	..	..	..	..	..	..	5.85	7.02	8.20	9.36	10.52	..
	One-sixteenth	..	..	..	..	..	..	6.46	7.75	9.04	10.32	11.60	..
	One-eighth	..	..	..	..	..	..	7.66	9.18	10.80	12.23	13.76	..
	Three-sixteenths	..	..	..	..	..	..	8.86	10.62	12.38	14.15	15.92	..
8	One-thirty-second	..	..	..	..	..	..	..	7.82	9.14	10.40	11.70	13.00
	One-sixteenth	..	..	..	..	..	..	..	8.55	9.96	11.38	12.78	14.22
	One-eighth	..	..	..	..	..	..	..	9.97	11.63	13.30	14.95	16.62
	Three-sixteenths	..	..	..	..	..	..	..	11.40	13.31	15.21	17.12	19.00
9	One-thirty-second	..	..	..	..	..	..	..	..	10.08	11.52	12.96	14.40
	One-sixteenth	..	..	..	..	..	..	..	..	10.92	12.48	14.03	15.63
	One-eighth	..	..	..	..	..	..	..	..	12.60	14.40	16.20	18.00
	Three-sixteenths	..	..	..	..	..	..	..	..	14.28	16.32	18.36	20.40
10	One-thirty-second	..	..	..	..	..	..	..	..	..	12.65	14.15	15.80
	One-sixteenth	..	..	..	..	..	..	..	..	..	13.60	15.30	17.16
	One-eighth	..	..	..	..	..	..	..	..	..	15.56	17.50	19.40
	Three-sixteenths	..	..	..	..	..	..	..	..	..	17.50	19.65	22.00

Link-Belt

(NOTE: The weight of 32-ounce duck rubber-covered conveyor belting is one-seventh heavier than weights.)

MARATHON REDESIGNS LINE OF BENCH GRINDERS

Marathon Electric Manufacturing Company has redesigned its line of bench grinders and buffers. The same principles of construction used in the previous models are retained. The motor housing has been changed to a smooth, round body in place of the corrugated body previously used.

PLANC MODERN GARAGE

Union City, Pa., June 19.—Gordon Johnson of Jamestown, N. Y., has acquired a building on Main Street, here, which it is planned to remodel and equip as a modern repair garage and super-service station.

JUNE NEW CAR SALES SLIGHTLY UNDER MAY, INDICATION OF SURVEY

(Continued from Page 1)

or 24 per cent. As compared with the first half of June, 1930, there is a reduction of 48 cars, or 15 per cent., the sales for the period last year being 308.

From St. Paul, Minn., the report is 493 new car registrations for Ramsey county during the first half of June, while the same period last year showed 428. For the first half of May this year the new car sales totaled 531. Used car sales reported by members of the St. Paul association for first ten days of June running about 10 per cent. under May figures.

San Antonio, Tex., reports new car sales for the first twelve days of this month, as compared with the first twelve days in May: June sales, 228; May, 184. Comparative figures for the same period of June, 1930, are not available, but the total sales for the month last year were 545. J. T. Simmons of San Antonio A. T. A. says: "I am inclined to think that used car sales so far this month are not as good as they were in May, and the majority of dealers are complaining of new car sales. A large percentage of the registrations is in the low-priced lines."

Registrations to June 10 this month in Los Angeles, Cal., follow: Ford, 394; Chevrolet, 372; Buick, 42; Auburn, 27; Studebaker, 25; Dodge, 23; De Soto, 22; Chrysler, 22; Essex, 20; Graham, 15; Cadillac, 15; Oldsmobile, 14; Pontiac, 14; De Vaux, 13; Hupmobile, 12; Willys, 10; Pierce-Arrow, 8; Hudson, 6; Plymouth, La Salle, Oakland, 5 each; Durant, Lincoln, Willys-Knight, 3 each; Nash, 4; Packard, 7; Austin, 4; Cord, Marmon, Reo, 2 each; Franklin, Gardner, Viking, 1 each; total, 1,102.

Registrations to June 10, 1930, follow: Ford, 382; Chevrolet, 113; Buick, 24; Auburn, 3; De Soto, 16; Chrysler, 20; Dodge, 11; Essex, 21; Studebaker, 9; Graham, 13; Graham-Paige, 2; Cadillac, 2; Oldsmobile, 10; Pontiac, 12; Hupmobile, 4; Pierce, 1; Willys, 2; Plymouth, 6; Hudson, 14; La Salle, 1; Oakland, 6; Durant, 11; Lincoln, 5; Nash, 6; Packard, 18; Cord, 1; Marmon, 1; Reo, 9; Willys-Knight, 3; Franklin, 2; Gardner, 2; Viking, 1; miscellaneous, 5; total, 736.

June new car sales, including the 10th, in San Francisco, Cal., were: Ford, 126; Chevrolet, 96; Buick, 21; Chrysler, 18; Studebaker, 13; De Soto, 11; Nash, 9; Graham, 8; Dodge, 7; Auburn, 6; Hudson, 6; Oakland, 6; Pontiac, 6; Packard, 5; Reo, 5; Plymouth, 4; Willys, 4; De Vaux, 3; Durant, 3; Hupmobile, 3; Oldsmobile, 3; Marmon, 3; Essex, 2; La Salle, 2; Pierce-Arrow, 2; Cadillac, 1; Cord, 1; Duesenburg, 1; Franklin, 1; Lincoln, 1; total, 377.

NEW DE VAUX DEALER

Atlantic City, N. J., June 19.—Announcement has been made of the appointment of A. H. Latta, Hartford and Ventner Avenues, to merchandise the De Vaux throughout the Atlantic City territory.

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS

Make and Model	Weight—5-P. Sedan	Wheel Base	Engine Make	Fan Belt Type	Thermostat Used	Valve Arrangement	Cylinders	Bore and Stroke	Piston Disp.	Compression Ratio	Tax H. P.	Brake, H.P. and Peak R. P. M.	Fist. Make or Material	No. Main Br.	Oil Purifier	Fuel Cleaner	Carburetor	Air Cleaner
Auburn 8-98	3916	127	Lyc	V	Dole	L	8	3 x4¾	268	*5.26	28.8	98@3400	*Alum	5	Pur	—	Sch	No
Austin	$1130	75	Own	F	——	L	4	2.2x3	45.8	5.1	7.8	13@3000	Alum	2	—	—	Til	No
Buick 8-50	3170	114	Own	V	Bish-Bab	O	8	2⅞x4¼	220.7	4.75	26.45	77@3200	CI	5	AC	AC	Mar	AC
Buick 8-60	3795	118	Own	V	Bish-Bab	O	8	3⅛x4⅝	272.6	4.63	30.02	90@3000	CI	5	AC	AC	Mar	AC
Buick 8-80	4255	124	Own	V	Bish-Bab	O	8	3⅜x5	344.8	4.5	35.12	104@2800	CI	5	AC	AC	Mar	AC
Buick 8-90	4340	132	Own	V	Bish-Bab	O	8	3⅜x5	344.8	4.5	35.12	104@2800	CI	5	AC	AC	Mar	AC
Cadillac V-8	4645	134	Own	V	Yes	LV	8	3⅜x4⅛	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	No
Cadillac V-12	5480	140–143	Own	V	Own	O	12	3⅛x4	368	5.5	46.9	135@3400	CI	4	AC	Gas	Own	No
Cadillac V-16	6100	148	Own	V	Yes	O	16	3 x4	452.0	5.50	57.5	165@3400	CI	5	AC	Gas	Own	No
Chevrolet	2685	109	Own	V	No	O	6	3⅛x3¾	194.0	5.00	26.3	50@2600	CI	3	—	AC	Car	AC
Chrysler 6	2850	*175¾	Own	V	Yes	L	6	3¼x4⅜	217.8	5.35	25.35	70@3200	*Alum	4	—	AC	Sch	Yes
Chrysler 8	3365	*186⅛	Own	V	Yes	L	8	3⅛x4¼	260.8	5.30	31.25	88@3400	*Alum	5	Yes	AC	Str	Yes
Chrysler 8 De L.	——	187⅛	Own	V	Yes	L	8	3¼x4¼	282.1	5.20	33.80	94@3400	*Alum	5	Yes	Yes	Str	Yes
Chrysler Imp. 8	4725	*211	Own	V	Yes	L	8	3½x5	384.8	5.01	39.2	125@3200	*Alum	9	Yes	AC	Str	Yes
Cord (Fr. Wh. D.)	4620	137½	Lyc	V	——	L	8	3¼x4½	298.6	5.25	33.8	115@3300	*Alum	5	Pur	AC	Sch	No
De Soto Six	2695	*169⅜	Own	V	Yes	L	6	3¼x4⅛	205.3	5.20	25.35	67@3200	*Alum	4	—	AC	Car	Yes
De Soto Eight	3025	*177	Own	V	Yes	L	8	2⅞x4¼	220.7	5.40	26.45	77@3400	*Alum	5	—	AC	Str	Yes
De Vaux 6-75	2810	113	Hall	V	Dole	L	6	3⅜x5	214.7	5.41	27.34	70@3400	Alum	4	AC	Ste	Til	AC
Dodge Six	2820	114¼	Own	V	Yes	L	6	3¼x4¼	211.5	5.20	25.35	68@3200	*Alum	4	No	AC	Car	AC
Dodge Eight	3174	118¼	Own	V	Yes	L	8	3 x4¼	240.3	5.40	28.80	84@3400	*Alum	5	Pur	AC	Str	AC
Durant 610	2787	112	Con	V	Bish-Bab	L	4	3⅞x4¼	200	4.80	24.0	50@2800	*Alum	3	AC	AC	Til	Til
Durant 612	2820	112	Con	V	Bish-Bab	L	6	3¼x4	199	5.43	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 614	3010	112	Con	V	Bish-Bab	L	6	3¼x4	199	5.43	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 619	2710	109	Con	V	Bish-Bab	L	6	3¼x4	199.0	5.32	25.4	71@3300	*Alum	4	AC	AC	Til	AC
Essex Super Six	2925	**113	Own	V	——	†L	6	2⅞x4½	175.3	5.80	19.8	60@3300	Alum	3	—	Ste	Mar	AC
Ford A	2375	103½	Own	V	——	L	4	3⅞x4¼	200.5	4.22	24.03	40@2200	Alum	3	—	—	Zen	—
Fr'klin S 15 Trans.	3930	125	Own	—	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 Trans.	4130	132	Own	—	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 De L	4220	132	Own	—	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Graham Pros. 6	3140	113	Own	V	Yes	L	6	3⅛x4½	207	5.45	23.4	70@3200	*Alum	7	AC	AC	Sch	Yes
Graham Std. 6	3265	115	Own	V	Yes	L	6	3¼x4½	224	5.45	25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 6	3330	115	Own	V	Yes	L	6	3¼x4½	224	5.45	25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 8	3560	120	Own	V	Yes	L	8	3⅛x4	245	5.45	31.25	85@3400	*Alum	5	AC	AC	DL	Yes
Graham Cust. 8	——	134	Own	V	Yes	L	8	3¼x4½	298	5.20	33.80	100@3400	*Alum	5	AC	AC	DL	Yes
Hudson Greater 8	3325	119–126	Own	V	——	L	8	2¾x4½	233.7	5.80	26.4	87@3600	Alum	5	—	Ste	Mar	AC
Hupmobile Cen. 6	2985	114	Own	V	Yes	L	6	3¼x4¼	211.6	5.10	25.35	70@3200	Alum	4	AC	Ste	Str	Yes
Hupmobile Cen. 8	3275	118	Own	V	Pines	L	8	2⅞x4⅝	240.2	5.20	26.45	90@3200	Alum	5	Pur	Ste	Str	Yes
Hupmobile C	3730	121	Own	V	Pines	L	8	3 x4¾	268.6	5.20	28.8	100@3200	CI	5	Pur	Ste	Str	Yes
Hupmobile H & U	**	125–137	Own	V	Pines	L	8	3½x4¾	365.6	5.20	39.2	135@3400	Alum	5	Pur	Ste	Str	AM
La Salle V-8	4635	134	Own	V	Yes	LV	8	3⅜x4⅛	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	—
Lincoln	5300	145	Own	V	Ful	L	8	3½x5	384	5.23	39.2	120@2900	Alum	5	Pur	Ste	Str	Un
Marmon 70	3103	112¾	Own	V	Pines	L	8	2⅞x4¼	211.2	5.50	25.4	84@3400	Alum	5	AC	AC	Str	AC
Marmon 88	4363	130–136	Own	V	Pines	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	AC	AC	Str	AC
Marmon 16	4800	145	Own	V	Pines	O	16	3⅛x4	490.8	6.00	62.5	200@3400	Alum	5	AC	AC	Str	AC
Nash Six-60	2800	114¼	Own	V	Bish-Bab	L	6	3⅛x4¼	201.3	5.00	23.4	65@3200	*Alum	7	AC	AC	Car	AC
Nash Eight-70	3000	116¼	Own	V	Bish-Bab	L	8	2¾x4⅜	227.2	5.00	26.4	78@3300	*Alum	9	AC	AC	Car	AC
Nash Eight-80	3360	121	Own	V	Pines	O	8	3 x4¼	240	5.25	28.8	87@3400	*Alum	9	AC	AC	Mar	AC
Nash 8-90	4000	124–133	Own	V	Pines	O	8	3¼x4½	298.6	5.25	33.8	115@3600	*Alum	9	AC	AC	Str	AC
Oakland V-8	3260	117	Own	V	Yes	H	8	3⅛x3⅜	251.0	5.00	37.8	85@3400	S St	3	—	AC	Mar	AC
Oldsmobile	2935	113½	Own	V	——	L	6	3⅛x4⅛	197.5	5.06	24.4	65@3350	CI	4	AC	AC	Str	AC
Packard 826-833	4479	127½–134½	Own	V	——	L	8	3⅜x5	320.0	—	32.5	100@3200	*Alum	9	Yes	—	Own	—
Packard 840-845	4955	140½–145½	Own	V	——	L	8	3½x5	384.8	—	39.2	120@3200	*Alum	9	Yes	—	Own	—
Peerless St. 8	3642	118	Own	V	Bish-Bab	L	8	2⅞x4¾	246.0	5.00	26.45	90@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Master 8	4521	125	Own	V	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	*Alum	5	Pur	AC	Sch	AC
Peerless De L.	4521	125	Own	V	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Custom 8	4766	138	Own	V	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	*Alum	5	Pur	AC	Sch	AC
Pierce-Arrow 43	4304	134–137	Own	V	Yes	L	8	3½x4¾	366	5.07	39.2	125@3000	*Alum	9	Han	AC	Str	Un
Pierce-Arrow 41-42	4831	142–147	Own	V	Yes	L	8	3½x5	385	5.07	39.2	132@3000	*Alum	9	Han	AC	Str	Han
Plymouth	2595	*167	Own	V	——	L	4	3⅝x4¾	196	4.60	21.03	48@2800	*Alum	3	—	AC	Car	—
Pontiac	2845	112	Own	V	Yes	L	6	3⅛x3⅞	200.0	4.90	26.3	60@3000	S St	3	—	AC	Mar	AC
Reo Royale 8-35	4650	135	Own	V	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Royale 8-31	4375	131	Own	V	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo 6-21	3610	121	Own	V	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	Alum	7	Han	Han	Sch	Un
Reo 6-21	3525	121	Own	V	Yes	L	6	3⅜x5	268.3	5.30	27.3	85@3200	Alum	5	Han	Han	Sch	Un
Studebaker Six	2920	114	Own	V	Dole	L	6	3¼x4⅛	205.3	5.20	25.4	70@3200	CI	4	Pur	Ste	Str	No
Studebaker Dict. 8	3095	114	Own	V	Dole	L	8	3⅛x3¾	221.0	5.00	30.0	81@3200	Alum	9	Pur	Ste	Str	AM
Studebaker Com. 8	3520	124	Own	V	Dole	L	8	3⅛x4¼	250.4	5.20	30.0	101@3200	Alum	9	Pur	Ste	Str	Un
Studebak'r Pres. 80	4250	130	Own	V	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	Ste	Str	AM
Studebak'r Pres. 90	*4360	136	Own	V	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	—	Str	AM
Stutz LA	4320	127½	Own	—	Bish-Bab	O	6	3⅜x4½	241.5	5.10	27.3	85@3150	*Alum	7	Wal	AC	Zen	AM
Stutz MA	4918	134½	Own	—	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Stutz MB	4863	145	Own	—	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Willys 6-97-98 D	*	110–113	Own	V	Var	L	6	3¼x3⅞	193	5.26	25.3	65@3400	CI	4	No	AC	Til	Til
Willys 8-80 D	3131	121	Own	V	Var	L	8	3¼x4	245.4	5.26	31.25	80@3200	CI	5	No	AC	Til	Til
Willys-Knt. 66-D	3400	121	Own	V	Var	K	6	3¼x4¾	255	5.26	27.3	87@3200	*Alum	7	Ski	Til	Til	Til

May Retail New Car Sales Of 250,000 Close to April

(Continued from Page 1)

of last year, a falling off of 25.6 per cent.

Retail sales of new cars in the first four months of the year, as indicated by the registration returns, amounted to 724,732, as compared with 1,047,627 in the corresponding period of last year, a decline of 31 per cent., and for the first five months the total, based on the May estimate, was 974,732, as compared with 1,392,668 in the similar 1930 period, off 30 per cent.

The figures for the first three months of this year are based on actual returns from all states except Georgia, which, for reasons not stated, withheld the official registration statistics for the first quarter. Estimates of Georgia sales for the three months have been made, however, based on what happened in the neighboring states of South Carolina and Alabama.

It appears, from what information can be obtained, that Georgia's registrations for the first quarter approximated 5,000 units, as compared with 8,395 in the corresponding period of 1930, a decline of about 40 per cent.

From the outlook at the present time, it would appear that registrations of new passenger cars in the domestic market in June will approximate 190,000, a decline of about 24 per cent. from May and a falling off of around 27 per cent. from the 260,942 total of June, 1930.

Such a total for June would bring the total for the first six months of this year to approximately 1,164,732, as compared with 1,653,610 in the corresponding period of last year, a decline of 29.5 per cent.

The following table compares the estimated new car registrations for the first six months of this year with the corresponding period of 1930:

	1931	1930
January	*125,650	180,094
February	*132,950	211,645
March	*200,400	298,824
April	265,732	357,064
4 mos.	724,732	1,047,627
May	†250,000	345,041
5 mos.	974,732	1,392,668
June	‡190,000	260,942
6 mos.	1,164,732	1,653,610

*Estimated on basis of returns from all states but Georgia. †Estimated on basis of returns from twenty states and District of Columbia. ‡Estimated on basis of field reports of sales.

Among the first twenty states reporting new car registrations for May four—Dalaware, North Carolina, Virginia and Wisconsin—showed seasonal gains over April, while in South Carolina, South Dakota, Oregon and West Virginia May sales were only slightly fewer than those of the preceding month.

In North Carolina and the District of Columbia retail sales of new cars in May exceeded those in the corresponding month of last year.

Following are the new car registrations in the states reporting for May, with comparative figures for May, 1930, and April, 1931:

	May 1931	May 1930	April 1931
Arkansas	871	1,883	964
Connecticut	4,285	5,813	4,834
Delaware	706	911	690
Florida	2,456	2,586	2,575
Idaho	802	1,431	649
Illinois	15,329	23,046	17,004
Maryland	3,624	4,361	3,738
Minnesota	6,882	11,064	7,816
Montana	1,037	1,519	1,108
N. Hampshire	1,599	1,938	1,844
N. Carolina	3,403	3,315	3,249
N. Dakota	1,137	1,998	1,400
Oregon	1,837	2,564	1,851
Rhode Island	1,887	2,183	1,988
S. Carolina	1,731	1,917	1,746
S. Dakota	1,151	1,862	1,190
Utah	675	1,300	887
Virginia	4,811	5,864	3,878
W. Virginia	2,542	4,239	2,674
Wisconsin	7,711	14,493	6,727
Dist. of Col.	2,918	2,274	3,008
Totals	67,414	96,561	69,822

WALKER MFG. CO. BUYS REES, MOON COMPANIES

Racine, Wis., June 19.—The Walker Maufacturing Company, jack manufacturers, has announced the purchase of the assets of the Rees Manufacturing Company, Pittsburgh, Pa., and the Moon Brothers Manufacturing Company, St. Louis, Mo. Both acquired concerns manufacture jacks and the Moon company also makes automobile tire pumps which will be added to the products turned out at the Racine plant.

Inventories and equipments of the two plants are being moved to Racine. This will insure continued work in the local plant.

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Transmis'n and Speeds	Universals	Rear Axle	Ratio	Brakes	Steering Gear	Spring Rear	Springs Shackles	Chassis Lubric.	Tires
Auburn 8-98	Chain	Del-R	*Del-R	Long	D-SM 3†	Un P	Col ½	*4.45	S D	Ross	S 56¾	Own	Bijur	17x5.50
Austin	Gear	Aut-L	*Aut-L	Rock	War-G 3	Spic	Sal ½	5.25	M	Say-B	Cant	Own	Al-Z	18x3.75
Buick 8-50	Tex	Del-R	Del-R	Own	Mun 3	Own	Own ½	4.54	Bendix	Sag	S 54½	Tryon	Al-Z	18x5.25
Buick 8-60	Tex	Del-R	Del-R	Own	O-SM 3	Own	Own ¾	4.45	M	Sag	S 55¼	Own	Alem	19x5.50
Buick 8-80	Tex	Del-R	Del-R	Own	O-SM 3	Own	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Buick 8-90	Tex	Del-R	Del-R	Own	O-SM 3	Own	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Cadillac V-8	Morse	Del-R	Del-R	Own	O-SM 3	Spic	Own ¾	4.75	Own-M	Sag	S 58	Own	Al-Z	19x6.50
Cadillac V-12	Morse	Del-R	Del-R	Own	O-SM 3	Spic	Own ¾	——	Own-M	Sag	S 58	Own	Alem	19x7.00
Cadillac V-16	Morse	Del-R	Del-R	Own	O-SM 3	Spic	Own ¾	4.39	Own	Sag	S 60	Own	Alem	19x7.00
Chevrolet	Var	Del-R	*Del-R	Own	Own 3	Own	Own	4.10	M	Sag	S 54	——	Alem	19x4.75
Chrysler 6	Morse	Del-R	Del-R	Own	Own 3	Un P	Own ½	4.60	H	War	S 53⅜	Tryon	Al-Z	19x5.25
Chrysler 8	Morse	Del-R	Del-R	—	Own 4	—	Own ½	4.10	H	War	S 54⅝	——	Al-Z	17x7.50
Chrysler 8 De L.	Morse	Del-R	Del-R	—	Own 4	—	Own ½	4.30	H	——	S 54⅝	——	Al-Z	17x6.50
Chrysler Imperial 8	Morse	Del-R	Del-R	—	Own 4	—	Own ½	3.81	H	Ross	S 57½	——	Al-Z	18x7.00
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	Detr 3	UnP&MM	Col F	4.80	H	Gem	S 62	Own	Bijur	18x7.00
De Soto Six	Var	Del-R	Del-R	—	Own 3	—	Own ½	4.33	H	Own	S 53⅛	——	Al-Z	19x5.00
De Soto Eight	Var	Del-R	Del-R	—	Own 3	—	Own ½	4.60	H	Own	S 54⅝	Rub B	Al-Z	19x5.25
De Vaux 6-75	Morse	Aut-L	*Aut-L	Borg	NP 3	Spic	NP ½	4.40	S D	NP	S 54¼	Tryon	Al-Z	19x5.00
Dodge Six	Morse	Del-R	Del-R	Borg	Own 3	Spic	Own ½	4.60	H	War	S 55¼	Tryon	Al-Z	19x5.00
Dodge Eight	Morse	Del-R	Del-R	Borg	Own 3	Spic	Own ½	4.60	H	War	S 54⅝	Rub B	Al-Z	18x5.50
Durant 610	Morse	Aut-L	*Aut-L	Borg	W C 3	Spic	Own ½	3.96	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 612	Morse	Aut-L	*Aut-L	Borg	W C 3	Spic	Own ½	4.45	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 614	Morse	Aut-L	*Aut-L	Borg	W C 3	Spic	Own ½	4.45	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 619	Morse	Aut-L	*Aut-L	Borg	Own 3	Spic	Own ½	3.90	S D	Own	S 54	Tryon	Al-Z	19x4.75
Essex Super Six	Morse	Aut-L	*Aut-L	Own	Own 3	Spic	Own ½	5.41	Bendix	Gem	S 54⅛	Own	Alem	19x5.00
Ford A	Var	Own	*Own	Own	Own 3	Own	Own ¾	3.78	M	Gem	S Tr39	Own	Al-Z	19x4 75
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	**	MM	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	**	MM	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 De L	Chain	Del-R	*Del-R	Br-L	War-G	Spic	Own ½	‡4.73	H	Gem	El 42	None	Al-Z	19x6.50
Graham Bros. 6	Link	Del-R	*Del-R	Long	— 3	—	——	4.45	H	Ross	S 54	ERS	Al-Z	19x5.00
Graham Std. 6	Link	Del-R	*Del-R	Long	— 3	—	——	4.30	H	Ross	S 54	ERS	Al-Z	5.50x18
Graham Spl. 6	Link	Del-R	*Del-R	Long	— 4	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Spl. 8	Link	Del-R	*Del-R	Long	— 4	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Cust. 8	Link	Del-R	*Del-R	Long	— 4	—	——	4.09	H	Ross	S 56	ERS	Al-Z	6.50x18
Hudson Greater 8	Morse	Aut-L	*Aut-L	Own	Own 3	Spic	Own ½	4.75	Bendix	Gem	S 54⅛	Own	Alem	18x5.50
Hupmobile Cen 6	Chain	Aut-L	*Aut-L	Borg	War-G 3*	MM	Sal ½	4.70	S D	Ross	S 53	Tryon	Al-Z	19x5.50
Hupmobile Cen 8	Morse	Aut-L	*Aut-L	Borg	War-G 3*	Un P	Sal	4.55	S D	Ross	S 52⅝	Rub B	Al-Z	19x5.50
Hupmobile C	Morse	Aut-L	*Aut-L	Long	War-G 3*	Un P	Own ½	4.55	S D	Ross	S 54	Own	Alem	19x6.00
Hupmobile H and U	Morse	Aut-L	*Aut-L	Long	War-G 3*	Un P	Own ½	4.07	S D	Ross	S 57	Own	Alem	19x6.50
La Salle V-8	Morse	Del-R	Del-R	Own	O-SM 3	Spic	Own ¾	4.75	Own-M	Sag	S 58	Own	Alem	19x6.50
Lincoln	——	Aut-L	*Aut-L	Long	Own 3*	Spic	Tim F	4.58	Bendix	Own	S 62	Own	Alem	7.00x19
Marmon Eight-70	Diam	Del-R	*Del-R	Rock	War-G 3	Spic	Sal ½	4.90	Bendix	Ross	S 54⅛	Tryon	Al-Z	29x5.50
Marmon 88	Diam	Del-R	*Del-R	Rus	Detr 3	Spic	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Al-Z	19x6.50
Marmon 16	Diam	Del-R	Del-R	Rus	Mun	Spic	Sal ½	3.78	Bendix	Ross	S 60	Rub B	Al-Z	18x7.00
Nash Six-60	Cel	Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	5.10	S D	Ross	S 50⅞	Tryon	Alem	19x5.00
Nash Eight-70	Diam	Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	5.10	S D	Ross	S 50⅞	Tryon	Bijur	19x5.25
Nash Eight-80	Diam	*Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	4.45	S D	Gem	S 55	Tryon	Bijur	18x5.50
Nash Eight-90	Diam	*Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	4.50	Bendix	Gem	S 56¾	Own	Bijur	19x6.50
Oakland V-8	Morse	Del-R	Del-R	Own	M-SM 3	MM	Own ½	3.90	M	Sag	S 54½	Inlox	Al-Z	28x5.50
Oldsmobile	Chain	Del-R	Del-R	Borg	M-SM 3	Un-P	Own ½	4.54	Bendix	Sag	S 54½	Tryon	Alem	28x5.25
Packard 826-833	Morse	NE	Dyn	Long	O-SM 3	MM	Own ½	4.66	M	Own	S 60½	——	Bijur	19x6.50
Packard 840-845	Morse	NE	Dyn	Long	O-SM 3	Un-P	Own ½	4.66	M	Own	S 60½	——	Bijur	19x7.00
Peerless St. 8	Link	Aut-L	*Aut-L	Rock	War-G 3	Spic	Sal ½	4.70	Bendix	Ross	S 56⅛	Rub B	Alem	29x5.50
Peerless Master 8	Link	Aut-L	*Aut-L	Rock	War-G 4	Spic	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless De L.	Link	Aut-L	*Aut-L	Rock	War-G 4	Spic	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless Custom 8	Link	Aut-L	*Aut-L	Rock	War-G 4	Spic	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.50
Pierce-Arrow 43	Gear	Del-R	Del-R	Long	Own 3	Spic	Own ½	4.08	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Pierce-Arrow 41-42	Chain	Del-R	Del-R	Long	Own 3	Spic	Own ½	*	Bendix	Ross	S 61	Faf	Al-Z	18x7.00
Plymouth	Var	Del-R	Del-R	Rock	Own 3	Own	Own ½	4.33	H	War	S 53⅝	Tryon	Al-Z	19x4.75
Pontiac	Morse	Del-R	Del-R	Own	Own 3	MM	Own ½	3.90	M	Sag	S 54	——	Al-Z	29x5.00
Reo Royale 8-35	Morse	Del-R	Del-R	Long	Own 3	Un P	Own ½	4.07	H	Ross	S 57½	Own	Far	6.50x18
Reo Royale 8-31	Morse	Del-R	Del-R	Long	Own 3	Un P	Own ½	4.07	H	Ross	S 57½	Own	Al-Z	6.50x18
Reo 8-21	Morse	Del-R	Del-R	Long	Own 3	Un-P	Own	4.42	H	Ross	S 56⅛	Tryon	Al-Z	17x6.00
Reo 6-21	Morse	Del-R	Del-R	Long	Own 3	Un-P	Own	4.07	H	Ross	S 56⅛	Tryon	Al-Z	17x6.00
Studebaker Six	Chain	Del-R	*Del-R	Long	Own 3*	Spic	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	19x5.25
Studebaker Dict. 8	Var G	Del-R	*Del-R	Long	Own 3*	Spic	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	19x5.25
Studebaker Com. 8	Var G	Del-R	*Del-R	Long	Own 3*	Spic	Own ½	4.73	Bendix	Ross	S 56	Faf	Al-Z	19x6.00
Studebaker Pres. 80	Var G	Del-R	Del-R	Long	Own 3*	Spic	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Studebaker Pres. 90	Var G	Del-R	Del-R	Long	Own 3*	Spic	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Stutz LA	——	Del-R	Del-R	Borg	Detr 4	Un P	Sal ½	4.75	H	Gem	S 60	Own	Bijur	19x6.00
Stutz MA	——	Del-R	Del-R	Long	Detr 4	MM	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x6.50
Stutz MB	——	Del-R	Del-R	Long	Detr 4	MM	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x7.00
Willys 6-97-98 D	Chain	Aut-L	*Aut-L	Borg	Own 3	Spic	Own ½	4.60	Bendix	Own	*S 49¾	Tryon	Alem	19x5.00
Willys 8-80 D	Chain	Aut-L	*Aut-L	Borg	Own 3	Spic	Own ½	4.40	Bendix	Ross	S 56	Tryon	Alem	19x5.50
Willys-Knight 66 D	Chain	Aut-L	*Aut-L	Rock	Own 3	Spic	Own ½	4.18	Bendix	Ross	S 56	Tryon	Alem	18x5.00

KEY TO ABBREVIATIONS

Weight—‡Austin standard 2 passenger coupe. **Hupmobile model H weighs 4,095 pounds, and model U 4,360 pounds. *Studebaker, 7 pass sedan. *Willys 6-97D weighs 2,656 and the 98 D weighs 2,706 pounds.

Wheel Base—*Over all length of chassis instead of wheel base, which manufacturers refuse to give. **Essex, seven-passenger sedan available on 119-inch wheel base.

Engine Make—Con. Continental; Lyc. Lycoming, Hall, De Vaux-Hall Motors Corp.

Fan Belt Type—V, V-type; F, flat.

Thermostat—Bish-Bab, Bishop & Babcock, Dole, Dole Valve Co., Chicago, Ill.; Ful Fulton Co.; Pines, Pines Winterfront; Var, various makes.

Valve Arrangement—L, L head; H, horizontal; O, overhead; K, sleeve valve; LV, V-type L head. *Air cooled. †Thermo syphon water circulation.

Compression Ratio—*Optional on the Auburn.

Piston Material—*Alum, aluminum with invar struts; Alum, aluminum alloy; CI, cast iron; S St, semi-steel.

Oil Purifier—Pur, Purolator; Wal, Wall; Han, Handy; AC, AC Spark Plug Company; Ste, Stewart-Warner; Ski, Skinner.

Fuel Cleaner—AC, AC Spark Plug Co.; Gas Gascolator; Ste, Stewart-Warner; Til, Tillotson; V-S, Van Sicklen.

Carburetor—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL Detroit Lubricator; Til, Tillotson.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Han, Handy; Un United; Til, Tillotson.

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G, various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; Del-R, Delco-Remy; N. E., North East; *Nash-Indicates twin ignition. *Bendix starter used.

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company; Rus, Russell Mfg. Co.

Transmission—War G., Warner Gear Company; Detr, Detroit Gear; Mun, Muncie Gear; WC, Warner Corporation; D-SM—Detroit Synchro-Mesh; O-SM—Own, Synchro-Mesh; M-SM—Muncie, Synchro-Mesh. N.P.—New Process Gear Corp.

**Franklin Transcontinent models are equipped with both Warner and Detroit 3 or 4 speed gear sets according to body type.

*Free Wheeling.

‡Free wheeling on Auburn De Luxe models only.

Universals—Un P, Detroit Universal Products Company; Spic, Spicer Manufacturing Corporation; MM, Mechanics Universal Joint Company.

Rear Axle—Col, Columbia; Sal, Salisbury; Tim Timken; N.P., New Process Gear Corp.; S-Semi-floating; F-¾ floating. F-Full floating.

Ratio—Optional on the Auburn. *On Pierce Arrow 43, 137 in. W. B. rear axle ratio is 4.42. On model 41 rear axle ratio is 4.42. On model 42 ratio is 4.25. †The axle ratio varies with body types on Franklin models.

Brakes—H, hydraulic; M, mechanical; SD, steeldraulic; Bendix, Bendix Brake Corp.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw; Say-B, Saylor-Beall Manufacturing Company; War, Warner; N.P., New Process Gear Corp.

Rear Springs—S, semi-elliptic; El, full elliptic; Cant, semi-cantilever; S-Tr, semi-transverse. *Rear spring length on Willys, 6-98D is 51 in.

Spring Shackles—Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insulator Company; Faf, Fafnir Bearing Company; ERS, Eaton Rubber Bushings; Inlox—Inland Mfg. Co.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Bijur, Bijur Lubricating Corp.; Far, Farval.

CHRYSLER TO EXHIBIT IN ATLANTIC CITY FAIR

Atlantic City, N. J., June 19.—The Chrysler Motors Corporation has engaged a large block of space in the second annual American Fair to be held in the Atlantic City Auditorium from July 16 to August 26 next.

Announcement of this has been made by Joseph F. Fields, president of the corporation, which will exhibit Chrysler, Dodge, De Soto and Plymouth automobiles in the display.

Nearly 200 nationaly known industries and other representative organizations have engaged space in the fair, which is conducted by the city of Atlantic City.

WINTERFRONT FORESEES BIG FALL SALES GAINS

Chicago, June 19.—Distributors attending the Pines Winterfront Company convention this week promised a big increase in their fall purchases of detachable winterfronts because their inventories are now the lowest of any time in the last ten years. This was announced today by C. A. Pipenhagen, chairman of the board.

Mr. Pipenhagen added: "The new items, the battery fillers and turn signals was enthusiastically received at the dealers' convention and the initial orders placed indicate that the sales volume for the immediate future will substantially exceed the estimate originally made by us."

NOTICE

Please see the fifth column to the left of this advertisement giving steering gear information. Notice the outstanding Ross predominance. The actual figures are:

ROSS

33

FIRST Competitor

12

SECOND Competitor

12

THIRD Competitor

5

Build Their Own

19

ROSS CAM AND LEVER steering gears predominate not only in passenger car field, but in truck and bus fields as well.

ROSS GEAR & TOOL CO.
Lafayette, Indiana

ROSS

Cam & Lever

Steering

There is only one CAM & LEVER Steering Gear

Fuel Research Carburetor

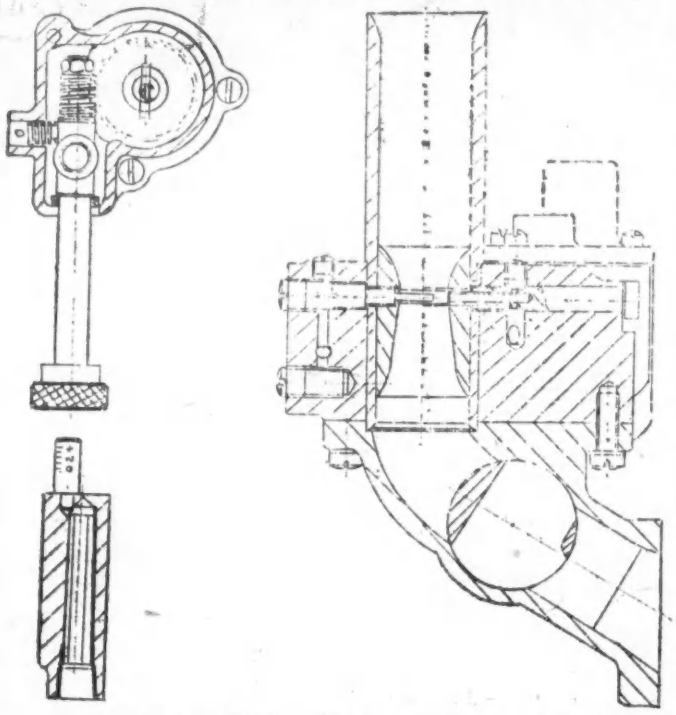


FIG. 4—Sections through the mixture passageway and the throttle operating mechanism of a modified form of the design shown in Fig. 2

(Continued from Page 8)

diaphragms and using needle valves for the fuel, gave results that were more satisfactory over a longer period.

The complications in the diaphragm valves come from (A) the mechanical complications and (B) the difficulty of production and increased cost. Finally, the air and fuel channels were completely separated with individual valves for each fuel and air channel. To simplify the operation one fuel and one air valve were operated together.

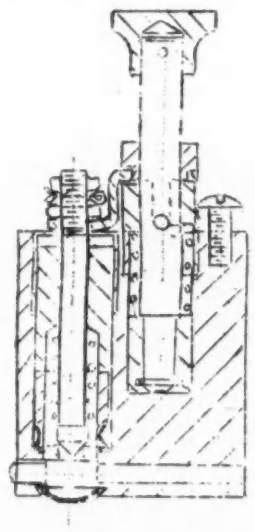


FIG. 5—Arrangement of a fuel valve and its companion air bleed valve, both of which are operated together

The design at present, with the changes incorporated, is illustrated in Figs. 5 and 6. Fig. 5 presents details of the fuel valve and its companion air-bleed valve. The former is simply a stainless-steel needle held on its seat by a suitable spring and is placed as close as possible to the fuel-metering jet to decrease the fuel-channel length. The air valve consists of a lapped stainless-steel cylinder operating as a gate valve to open and close the proper air-bleeding passageway. The lifting of this gate valve also raises the fuel valve from its seat, and in this manner the two operate as a unit. Fig. 6 is a plan view of the routine-test type.

General Results

The operation of the carburetors shows an adjustment range of two turns when using ordinary gasoline, but the lighter gasolines will have this effective adjustment decreased. However, the detonation value can usually be carried to a 50 per cent. value on either side of the power peak. The detonation peak will not always come at the same carburetor adjustment for the same fuel. This is due to slightly different restrictions in the air passageways from each bowl and also the small change in float level.

The actual value of the maximum detonation point usually checks within three points on the gas scale. The knock-meter readings should usually check to a closer value, particularly near the 50 per cent. region on the meter scale. If the detonation values do not check within this limit, then either dirt or vapor bubbles are present somewhere in the system.

Throughout the investigations vapor was always encountered whenever long conduits were used. Thus the fuel containers must be mounted directly above the carburetor float-bowls. A small change in level will change the detonation value, and air bubbles in the supply line will readily disrupt the flow to the carburetor bowl and consequently cause this condition. The higher the gasoline volatility the more careful the operator must check the vapor conditions.

The fuel nozzle supplied will provide an adequate range of mixtures from most gasolines. In cases where the proper adjustment range cannot be attained, then smaller jets can readily be installed.

The float levels are indicated by a gauge glass mounted on a carburetor bowl. The actual float level is 19-32-inch below the top of the bowl. The gauge glass graduation is ½-inch. The 3-32-inch difference is due to capillary action in the gauge tube. Consequently, in resetting float levels the ½-inch dimension must be used instead of the 19-32, as listed on the drawings. In checking the same fuel in different bowls, these levels must check within 1-32-inch. Otherwise float level is not of serious import.

Conclusions

This instrument, we believe, is satisfactory for general detonation testing. The temperature range can extend from 40 deg. Fahr. to the point where gassing of the fuel becomes objectionable. The throttle is less sensitive than that of the butterfly type and, if found objectionable in the present design, can be changed by altering the shape of the throttle barrel. Fuel nozzles can be changed to provide for fuel densities outside the normal range. Channels are provided with plug screws which facilitate cleaning either with air or flushing with fuel. The carburetor is expected to be sufficiently flexible to operate satisfactorily under the wide range of testing conditions encountered. The design has been hurried and many details are no doubt neglected. Consequently, criticisms are welcomed so that in the final design nothing of importance will have been overlooked and the device will operate satisfactorily to all.

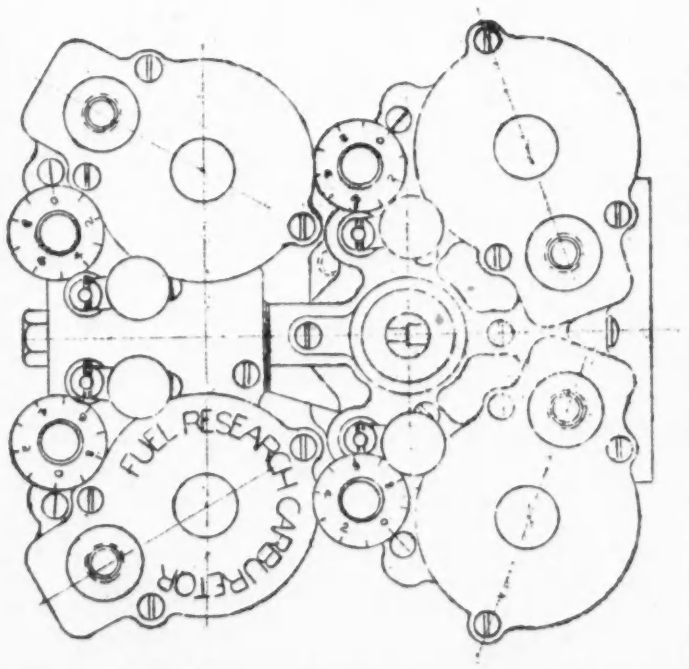


FIG. 6—Plan view of the routine test type as finally developed, showing the air bleed adjustments and the valve arrangement

TEXAS A.D.A. HEADED BY ORAND; SPIRITED PROGRAM OUTLINED

(Continued from Page 1)

ceiving benefits of the association who are not members, and these meetings are planned to better acquaint them with association activities and the value of membership.

It was suggested that for improving service the owner of the business should endeavor to meet customers who drive into service department as much as possible.

The dealers indorse legislation for drivers' license law, a law for certificate of title, and an amendment to the present headlight law which would make it more effective.

Rush Allison, Abilene, won the cup in the first flight golf tournament. G. P. Kuykendall, Lubbock, won second flight, and James Jordan, San Antonio, consolation.

The women were treated to bridge luncheon at Baker Hotel Monday, followed by annual banquet that night with American Legion Band of Ranger furnishing music. A dinner dance was held Tuesday night through the courtesy of the Crazy Hotel, headquarters of the convention.

Little was said about business conditions and future sales, while used car sales were not mentioned. The attendance was good.

ILLINOIS OIL INSPECTION STAFF ORDERS 60 FORDS

Decatur, Ill., June 19.—C. C. Bilgere, of the Talbott-Bilgere Motor Company, Ford dealership, last week received a contract for delivery of sixty Ford coupes for use by the Illinois oil inspection department staff.

GENERAL PRODUCTION SESSION DISCUSSES LABOR TURNOVER

By WILLIAM C. CALLAHAN
News Editor

WHITE SULPHUR SPRINGS, W. Va., June 19.—The general production session was signalized by a paper on the "Cost to Industry of Labor Turnover," delivered by **Harry Horning, president of the Waukesha Motor Company,** and past-president of the S. A. E. This paper brought out some excellent discussion, which is presented herewith:

Chairman Wennerlund, General Motors: "Ladies and gentlemen: We have before us this evening the subject for discussion of labor turnover, and particularly that phase of it that has to do with 'why technical men leave home.' To those of us who have something to do with engineering or manufacturing, or other business activities the problem of turnover and particularly trained men leaving the organization concerns all of us.

"We have with us this evening a man who has had a broad experience in manufacturing activities, and who is now at the head of a large factory organization, who will give us his views on this important subject.

"I take great pleasure in introducing to you **H. L. Horning, president and general manager of the Waukesha Motor Company."**

Mr. Horning: "I want to stop to comment on a fact which is well known in the industry. There are two great corporations in the industry whose management is diametrically opposite. The one it is no honor to be employed by, but it is a great honor to leave it. There is another organization in which it is a great honor to enter its employ, and it is a great dishonor to leave it.

"In the first instance, the organization that has a very low state of good will has a selling organization that is ready to crumble at any time. In the case of the second company, they have a very strong, growing and increasingly powerful sales organization.

"In the first instance, they jam all the cars they can down the sales organization's throat; in the second instance, they keep their production in tune with the sales. This is perhaps the most outstanding illustration in the industry of internal good will."

Chairman Wennerlund: I believe from my own observation that, as Mr. Horning says, a zero turnover would not be desirable either from the viewpoint of a corporation or from the individual, particularly in the technical departments.

"A corporation or an organization that has a steady set of technical men is apt to be, I believe, far behind the times. A little turnover, not too great, is very desirable to get in new ideas. Undoubtedly this depression that we are going through has given the opportunity of in many cases weeding out some of the timber that was not going to get along very far, and when times pick up such an organization, I believe, will be in better shape by getting a little new blood."

Mr. Horning: "There is such a tremendous effect on this subject of the attitude of men for or rather toward management. This attitude of men toward management not only illustrates itself in labor turnover but in many other things.

"We discovered that there were certain types of men who had a mental twist that amounted to this, 'I am in a hazardous occupation and it wouldn't be natural for me to go a month without having an accident.'

"With that mental attitude they go right out and have their accident. Some of them decide that it is much more hazardous than they thought it was, and they should have more accidents than once a month. So they decide to have more accidents. This type of mind decides on two accidents a month. After two accidents a month they decide that it is much more hazardous than they though it was, and they think that they should have four accidents a month.

"That sounds like a humorous statement to you, but it is true. There is that type of mind in the world, and you get them in your employment.

"The treatment is entirely psychological. We bring them in and say that because they are running on a drill press is no reason why they should have accidents. We tell them that they have a diseased mind, and that there is no necessity for accidents. If they will get over the belief that they have to have an accident they won't have any.

"Then we set them out in the plant and watch them. We watch the conditions under which the accidents occur. We catch them in the act of taking on another accident. Then we point out how it was and invariably the cure is effected. These men go back to work and change their eight accidents a month to zero accidents a month. That is a mental state which leads to labor turnover.

"Management has its greatest opportunity in understanding that mental state. Technical men have their greatest opportunity in understanding those things of the mind which come into psychology and those things of the mind which come into a better understanding of men and their reactions. If you understand men and their reactions you can solve many, many problems."

NEW, IMPROVED LINE OF PACKARDS TO BE SHOWN WEDNESDAY

(Continued from Page 1)

given out by the company for publication, it may be stated that none of the "surprises" that have been hinted at will be found in the line. There is no front-drive, or free-wheeling, say those who have seen the cars. The familiar Packard radiator remains, but it is said to have been modified in that it shows a slight vee, in keeping with the modern trend. Many changes have taken place, but there is no doubt of the Packard parentage. It is evident, they say, that the engineers have sought to give the customers roominess and luxurious riding.

In this connection it is said that one of the main features, mechanically speaking, are adjustable shock absorbers, controlled through a big button within easy reach of the drivers.

Packard executives interpret the recent distributors and dealers' meeting as evidence of a return to better times in the automobile business. At first there was some thought of not bringing the field forces here because of the expense it would incur on distributors and dealers, with times as hard as they have been. Finally the meeting was definitely scheduled and it was expected that about 400 would attend.

Without urging, the response was surprising. They came from all parts of the country. There were three special trains from New York and the roll call showed something like 800, twice as many as had been looked for and all were pepped up over the change in conditions that has come along of late.

Had the meeting been held a month ago, it would have been hard to get a corporal's guard, it was said at the factory, but the way things are going now it is thought there has been a decided change for the better in the automobile business, in the opinion of the men who have to retail the cars.

As evidence of this feeling, there is the fact that there were 400 cars in the driveaway that followed the meeting.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS